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Below the Poverty Line

Duration of Poverty in Russia

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This paper focuses on persistent poverty in Russia and determines the main micro and macro factors that cause a household to be persistently poor. As potential correlators of persistent poverty, main demographic, socio-economic and regional characteristics of a household, as well as the characteristics of the household's head are considered. The research was carried out on the data of the Russian Longitudinal Monitoring Survey (rounds 5–9). As an econometric tool, ordered logit analysis was used. A separate section of the paper is devoted to an investigation of the main determinants of entry and exit into and from poverty, for which both logit and ordered logit models were used.

Keywords. Russia, persistent poverty, ordered logit models, welfare indicators, RLMS.

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1. INTRODUCTION

The transition from a centrally planned to a market economy has resulted in a large increase in income inequality in virtually all countries of the former Soviet Union (FSU) and Central and Eastern Europe (CEE). On the one hand, the collapse of the old system gave an impetus to entrepreneurship and led to an increase in the well-being of managers and business owners. On the other hand, some people (especially the unskilled) could not meet the new requirements of the market economy and fell into unemployment and poverty. In addition, persistent budget deficits in the majority of transition countries, often accompanied by high inflation and a decrease in real GDP, led to a wave of layoffs and a decrease in the real wages of many civil servants. As a result, income inequality among households in most transition countries grew abruptly, and the number of people with income below the subsistence level increased.[1]

Apart from resulting in an increased number of people with income below the poverty line, the process of transition has also led to changes in the demographic and social characteristics of poor people. Under the socialist regime, official statistics either disregarded poverty, or simply defined as "poor" those who represented the so-called "social stigma" (parasites, alcoholics, and disabled single people). During transition, however, the so-called "new poor" appeared, which are mostly categories of people who were relatively well-off before. Many researchers of poverty in transition countries have noted the high poverty level among households with many children,

[1] Research conducted by Milanovich (1998) shows that the GINI coefficient, which characterizes the level of income inequality of households in CEE countries, former CIS and Baltic countries, has risen on average from 0.24 in 1987–1988 to 0.33 in 1993–1995, and the poverty level, calculated according to the international absolute poverty line concept (amounting to $4 per day) has increased on average over the same period from 3% to 43% (see Table 13 in the Appendix). The biggest increase in both poverty and inequality indicators was observed in such countries as Ukraine, Moldova, Romania and Russia, followed by the Baltic countries. However, in countries like Slovakia, Slovenia, Hungary and the Czech Republic, the process of transition to a market economy was accompanied by only a slight increase in the number of absolutely poor people, and by a small rise in the level of income (expenditure) inequality among households. It is interesting to note that Slovenia experienced even a decrease in its GINI coefficient.

as well as among households whose members work in state-controlled sectors. Moreover, the high incidence of poverty among uneducated and unemployed people has also been found to be an attribute of almost all transition countries.

As in most other transition countries, in Russia the main reasons for the increase in poverty figures are, first, the fall in national income and the decline in living standards associated above all with the inadaptability of the industrial and financial sectors to the changes happened, and, second, the growth of income inequality, which is a consequence of the enrichment of some segments of the population and the impoverishment of other segments.

Indeed, official statistics show that there was a dramatic fall in real personal income in Russia in 1992. At the same time, the share of income belonging to the highest quintile gradually rose, approaching 50 percent, whereas the share of income for the two lowest quintiles showed a downward trend (Table 1).

Many researchers of poverty have focused on the phenomenon of long-term or persistent poverty. Whereas the majority of households, under some circumstances, fall into poverty for a relatively short time, persistently poor households stay in poverty during long periods, and often cannot escape from poverty without external assistance.

Table 2 shows how many times (during four years) households were poor in four different countries. Of these four countries, Russia, Poland and Hungary represent transition countries, while the fourth country, Great Britain, represents a developed country. The calculation was made by using two relative poverty lines: (1) half the median and (2) the 25-percent quintile of equivalent per-capita household incomes. The results reported in the table show a high level of income/expenditure mobility for Russian households, in comparison with both Western European countries (Great Britain) and Eastern European countries (Poland, Hungary). Indeed, more than half of all Russian households had incomes (and slightly less than half of households had expenditures) less than that of the lowest quintile for at least one out of four rounds. In addition, a comparison shows that the share of people that are poor for a relatively long time is high. Both in Russia and in Poland, the two most representative transition economies, more than 15 percent of households were poor during three or more rounds, which is a little bit higher than the corresponding figure for Great Britain, where the share of such households is 14 percent.

Table 1. Major figures on personal well-being in Russia during the transition period.

Year	Consumer price index	Real personal income per capita	Real poverty line	Poverty rate, %	Quintile shares				
	1999 = 100	1999 R/mon	1999 R/mon		Lowest, 20%	Second, 20%	Third, 20%	Fourth, 20%	Highest, 20%
1985	0.005	2602	1374		10.0	14.6	18.3	23.1	34.0
1986	0.006	2642	1371		9.8	14.4	18.2	23.1	34.5
1987	0.006	2689	1371		9.5	14.3	18.2	23.1	34.9
1988	0.006	2850	1364		9.3	14.1	18.1	23.1	35.4
1989	0.006	3097	1377	11.5	8.9	13.7	17.9	22.9	36.6
1990	0.007	3262	925		9.8	14.9	18.8	23.8	32.7
1991	0.013	3590	1186		11.9	15.8	18.8	22.8	30.7
1992	0.211	1727	909	29.8	6.0	11.6	17.6	26.5	38.3
1993	2.052	2075	1000	30.9	5.8	11.1	16.7	22.4	30.7
1994	8.362	2394	1029	23.1	5.3	10.2	15.2	23.0	46.3
1995	24.88	2057	1069	26.2	5.5	10.2	15.0	22.4	46.9
1996	36.77	2071	1007	21.4	6.2	10.7	15.2	21.5	46.4
1997	42.19	2197	975	21.2	6.2	10.6	15.1	21.4	46.7
1998	53.86	1853	926	24.6	6.2	10.6	15.0	21.0	47.4
1999	100.0	1534	909	34.1	6.2	10.6	15.0	21.0	47.4

Source: A. Shorrocks, S. Kolenikov "Poverty Trends in Russia During the Transition."

Table 2. Frequencies of households in poverty — a comparison of the number of years households spend in poverty in Great Britain, Poland, Hungary and Russia.

Number of years in poverty	Great Britain (BHPS 1991–1994)	Poland (HBS 1993–1996)		Hungary (HHS 1992–1996)	Russia (RLMS, 1994–1998)	
	# at 1-st quintile	# at 1-st quintile	50% median	50% median	# at 1-st quintile	50% median
None	64.0	54.9	67.4	73.9	47.5 (51.0)	55.6 (56.2)
One	13.0	17.9	15.4	13.9	23.0 (21.0)	21.2 (20.6)
Two	9.0	11.6	8.9	5.9	14.4 (12.3)	12.0 (11.1)
Three	7.0	9.1	5.2	2.4	10.2 (8.4)	6.8 (6.9)
Four	7.0	7.5	3.1	3.8	4.9 (7.3)	4.3 (5.2)
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Great Britain — Jarvis and Jenkins (1997); Hungary — Speder (1998); Poland — Wlodzimierz (1999); Russia — author's calculation based on RLMS data.

Expenditures are in brackets.

This paper focuses on persistent poverty in Russia, and determines the main micro and macro factors that cause a household to be persistently poor. A precise determination of the category "persistent poverty" and a clear distinction between this category and the category "temporary poverty" will enable social assistance programs to the poor to be better targeted. The problem of proper targeting is especially topical under tight fiscal conditions, which the Russian government has faced throughout the transition period. Indeed, if the persistently poor could be accurately identified, resources could be targeted directly at them, thus reducing the overall fiscal burden of non-targeted benefits.

The object of research in this paper is the household, *i.e.*, people who live together under the same roof. I assume that if a household is poor, then all its members are poor. This follows from the assumption that all household members contribute to household income or consumption in

the same degree or in the same proportion (equivalence scale). In order to take into account the effect of differences in the needs of people of different ages, and the effect of sharing in the consumption of public goods, the equivalence scale based on the so-called Engel method is used.

A household is considered "poor" in a given round if the per-capita consumption of its members, taking into account the equivalence scale, is lower than half the median level of the per-capita expenditure distribution (OECD definition). The data used are obtained from the Russian Longitudinal Monitoring Survey (rounds 4–9).

The econometric methods used in this paper are based on multiple choice models, in particular, ordered logit models, which allow me to work efficiently with discrete data. The dependent variable for this model can take four values, which correspond to four poverty profiles: "non-poor," "temporarily poor," "volatile expenditures around the poverty line" and "persistently poor." As potential correlators of persistent poverty, I consider the main demographic and socio-economic characteristics of a household, as well as the characteristics of the household's head.

A separate section of the paper is devoted to investigating the main determinants of poverty entry and exit, for which both logit and ordered logit models are used. The paper is organized as follows. First, a literature review is given in Section 2. Then, the data are described in Section 3, while Section 4 is devoted to poverty definitions. The methodology is described in Section 5, and the results of the ordered logit analysis are presented in Section 6. Section 7 is dedicated to a description of poverty entry and exit. In Section 8, major conclusions are drawn and some policy implications are proposed.

2. LITERATURE REVIEW

Many papers have been written on the subject of poverty in transition and developing countries. There is unanimous agreement among nearly all researchers that since the beginning of the transition to a market economy, income inequality among households has risen substantially, as has the number of households below the poverty line. Moreover, most researchers have arrived at similar conclusions about the major features of poor households in transition countries: there is a high incidence of poverty among households with children and a high correlation between poverty and unemployment and/or lack of education. Mainly due to the

absence of appropriate data, most of the research on poverty in transition countries has been conducted on a cross-section of data for one or several years. So far, little or no attention has been paid to the problem of persistent poverty.

In his fundamental research conducted under the aegis of the World Bank, Branko Milanovic (1998) investigates poverty and inequality in transition economies. The author describes common processes attributed to the transition period in former CIS, CEE and Baltic countries, and their influence on the welfare of households. In addition, he shows peculiarities in the poverty picture for these different transition countries. Other important studies include those by Grootaert (1993) and Wlodzimierz (1999), who are devoted to the problem of poverty in Poland; Bisogno, Castel, Gomart (1998), who investigate poverty in Croatia; and Byung-Yeon Kim (1998), who studies poverty in Romania.

A large number of papers have been written on the problem of poverty in Russia, including those by Klugman (1995), Bradbary, Jenkins and Micklewright (2000), Korchagina, Ovcharova and Turuntsev (1999), and Braithwaite and Ivanova (1998). Almost all of these studies were carried out on the basis of the same data used in this paper, *i.e.*, the Russian Longitudinal Monitoring Survey (RLMS), which allows me to compare their results with mine. An important difference is that most of the papers on poverty in Russia are based on the concept of absolute poverty, while this paper is based on the concept of a relative poverty line. If I were to find similar results based on different definitions of poverty, this might give me the right to suggest that I have discovered real poverty correlators, which are invariant to the poverty line definition. If I were to find substantially different results, however, this would require a deeper consideration and a more thorough discussion of the findings obtained.

In her paper, Klugman (1995) investigates poverty in post-communist Russia based on the data of the RLMS, rounds 1, 3, and 4. She found that the poorest category constitutes households with three or more children, followed by households with one or more disabled members. In addition, Klugman shows that Russia's system of social expenditure programs badly satisfies its purposes (poverty reduction and compensation for market failure), and proposes a set of corrections that could improve the situation.

Bradbary, Jenkins and Micklewright (2000) investigate income inequality and long-term poverty among households with children in the USA, Britain, Germany, Ireland, Spain, Hungary and Russia. For Russia, the authors used data from rounds 6 and 7 of the RLMS. Results obtained

in their paper show that compared with the other countries in the sample, Russia not only has the highest level of inequality among households with children in both income and expenditures, but also has the highest relative poverty level, which amounts to 22.5 percent when the information about expenditures is used as a welfare index, and to 24.1 percent when the information about income is used. Moreover, the authors suggest that the GINI coefficient in Russia, unlike that of the other countries, tends to increase when switching from the overall sample to a sample restricted by households with children (from 0.43 to 0.45 for the income-based poverty determination, and from 0.42 to 0.45 for the expenditure-based poverty determination). In accordance with the increasing of level of poverty in the restricted sample,[2] a household with children appears to be one of the most vulnerable categories in the context of poverty.

In their paper, Korchagina, Ovcharova and Turuntsev (1999) focus on the construction of an adequate estimation of poverty in Russia, which takes into account all peculiarities of housekeeping by Russian households. The main result of this paper is a recalculation and revision of poverty figures for Russia. To investigate poverty, apart from using the RLMS, the authors work also with official statistics and a survey created and assembled by the Institute for Socio-Economic Studies of Population. They use household expenditure information, putting aside the approach attributed to the official Russian statistics of determining major poverty indicators using household income information. This allows them to take into account the monetary equivalent of subsistence agriculture when calculating household welfare. Moreover, Korchagina, Ovcharova and Turuntsev calculate coefficients of economies-of-scale households within the household, using different sources of data. On the basis of economies-of-scale corrections, the authors show that the scale of poverty determined on the basis of the availability of a minimal basket of goods, proposed by Goskomstat of Russia, decreases on average by 8 to 20 percent. However, there are some drawbacks of their research, which do not allow us to consider it as a complete investigation of poverty in Russia. These drawbacks are the relatively weak econometric part of the research and the fact that the authors put an emphasis on calculating and correcting poverty indicators, and do not study who is actually poor.

[2] According to the results of our research obtained using the OECD relative poverty determination for the whole sample, approximately 18.4% of the households were poor in 1995–1996.

The work by Braithwaite and Ivanova (1998), devoted to long-term poverty in Russia, is very close to the spirit of this research. Long-term poverty is analyzed on the basis of information about household expenditures from rounds 5–7 of the RLMS. As a threshold separating non-poor from poor households, the authors use the poverty line determined by Goskomstat. They defined the long-term poor as those households that were in poverty for all three rounds.

The advantage of Braithwaite and Ivanova's work is that the authors consider various aspects of the problem of long-term poverty, pointing at the major demographic and regional characteristics of long-term poor households as well as revealing the relationship between long-term poverty and such socio-economic phenomena as unemployment and wage arrears. At the same time, a drawback of the research is that the authors do not try to find and describe major differences between long-term poor households and temporarily poor households. While they do compare the major characteristics of households who were never poor with those of households who were poor during all three rounds, little or no comparison is made between long-term poor households and those households who were poor for one or two years.

Despite the similarity in the subject of investigation, this paper differs from that of Braithwaite and Ivanova in several key aspects. First, since I use a longer observation period, I would hope that my results are more robust. Second, this research is based on the concept of a relative poverty line, which allows me to consider as long-term (or persistently) poor those households that, under any social or political perturbations, stay at the bottom of the expenditure (income) distribution. Third, whereas in Braithwaite and Ivanova's work the relationship between poverty and various household characteristics is studied by a simple tabulation of the frequency with which households fall into one of eight poverty categories,[3] in this research persistent poverty is modeled by an ordered logit approach. This econometric approach allows me not only to determine the major characteristics of persistently poor households, but also to compare characteristics of these households with characteristics of temporarily and recurrently poor households. Finally, Braithwaite and Ivanova limit the scope of their research by discussing only "static" reasons for persistent poverty, and do not discuss dynamic aspects. Thus, they disregard changes in major household characteristics leading to entry into or exit from poverty. In this paper, on the contrary, I investigate not only

[3] In Braithwaite and Ivanova's paper, these categories are of types a1–a2–a3, where *ai* (*i* = 1, 2, 3) can take two meanings corresponding to two cases: household is poor or household is not poor in the corresponding year *i*.

how changes in the major characteristics of households affect poverty entry and exit, but also try to determine the subsequent household path after this entry or exit.

3. DATA DESCRIPTION

The basic source of data for this project is a panel constructed from five rounds of the Russian Longitudinal Monitoring Survey (RLMS), in particular, rounds 5, 6, 7, 8 and 9 (corresponding to the years 1994, 1995, 1996, 1998 and 2000). These data are publicly available from the Internet site http://www.cpc.unc.edu/project/rlms, and were created and assembled by the Russian Institute of Nutrition, the University of North Carolina (Chapel Hill, North Carolina), the Institute of Sociology (Moscow) and the Russian Academy of Sciences (Moscow). The purpose of the RLMS is to investigate changes in the life of the people of Russia caused by transition from the soviet-style economy to new market foundations. Although the RLMS data is not representative regionally (Heerida, 1997), it can be used for the study of poverty in Russia as a whole. The number of households under consideration in each round is approximately 4000–4500, but not all households were observed for all five years. Over the course of five years, some households dropped out of the survey and others were added. In this paper I use only those households that are included in all five rounds and that reported income and expenditure information (2145 households).

4. DEFINITION OF POVERTY

4.1. Choice of welfare appropriate indicator

One of the major problems encountered in investigating poverty in transition countries is the choice of criterion by which household welfare can be adequately measured. The main problem arises not from the subjectivity of the notion of "welfare" (Sen, 1983; Atkinson, 1982), but rather from inadequate and incomplete information reported by respondents.

In the literature on poverty in developed countries, household incomes are usually used as an indicator of welfare. This approach is indeed appropriate in developed economies for a variety of reasons. First, in Western countries, personal incomes received as wages are, on average, not very mobile in the short-run (1–3 years), which can be explained by both the stability of developed economies and by the existence of labor con-

tracts (which are usually signed for 3 years). Elderly persons typically receive pensions on a regular monthly basis, without arrears, and therefore the mobility of incomes received in the form of pensions tends to be low as well. Second, information about income reported by Western survey respondents is likely to adequately reflect the respondents' welfare level. Since most survey respondents work in the official sector of the economy (as opposed to the shadow sector) and pay taxes, they do not have incentives to distort information about their actual incomes. In Russia and other transition countries, however, reported incomes are most likely not the best measure of household welfare (see for example Ravallion, 2001). There are several reasons for this phenomenon. On the one hand, widespread wage and pension arrears make reported income underestimate true well-being. On the other hand, there is a strong tendency among the population not to trust any sociological surveys or investigations, no matter by whom they are conducted, due to the fear of revealing some confidential information, especially information about their earnings or salaries. The typical Russian respondent unconsciously or consciously believes that any information he or she provides will be transmitted to some governmental organization, for example, the tax authorities. The roots of this fear can be tax evasion, an extremely developed informal sector,[4] or simply mistrust of the government, which has a bad reputation for swindling people.

Because of the above-mentioned problems, a better indicator of welfare level is information on household expenditures.[5] Indeed, there is little reason to believe that respondents will deliberately underreport their level of expenditures. Moreover, information about household expenditures enables one to take into account subsistence agriculture. The RLMS income provides information only on the quantity of goods exposed for sale, whereas data on expenditures allows one to take into account how much was produced for one's own consumption. It would be incorrect not to consider the unsold share of subsistence agriculture. Indeed, the RLMS data show that the share of subsistence agriculture offered for sale is only about 10 to 15 percent, while the share consumed is about 85 to 90 percent.

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[4] According to estimations made by Sharon and Tedstrom (1997), the share of the shadow economy was 50% of Russia's GDP in July 1997. Radeev (1998) estimates a "shadow income" of about 25–30% of the income of the average Russian household.

[5] In the RLMS, the respondent (usually it is the oldest woman in a household) is asked to estimate the monthly level of household expenditures on food, based on purchases of the preceding week, and to estimate the expenditures on durables, clothing fuel, services, rent, and utilities for the preceding month.

Table 3 shows the major statistical characteristics of equivalent incomes and expenditures of households for different rounds of the RLMS. In order to make these statistics comparable for different rounds of the RLMS, I deflate them to prices of December 1994, using the corresponding regional prices provided by Goskomstat. Moreover, in order to make my analysis comparable for households of different sizes, I use equivalence scales (described below). The results reported in Table 3 suggest that, on average, expenditure levels exceed income levels by 30 to 40 percent, which indicates that information about some major revenue components of the household budget was not taken into account. If I subtract the consumption share of subsistence agriculture from household expenditures, then the difference between equivalent levels of incomes and expenditures reduces on average by 17 percent. The remaining difference most likely can be explained by the underreporting of income levels by respondents.

Table 3. Comparison of incomes and expenditures of households.

	Round 5	Round 6	Round 7	Round 8	Round 9	Perm. variables
Mean real equivalent expenditures of a household, rubles (1994 — base)	281 401	220 577	205 877	165 480	181 592	209 826
In comparison with previous year, %	–	78.4	93.3	80.4	109.7	–
Median real equivalent expenditures of a household, rubles (1994 — base)	190 895	154 546	141 416	113 969	126 700	163 388
In comparison with previous year, %	–	81.0	91.5	80.6	111.2	–
Mean real equivalent income of a household, rubles (1994 — base)	166 063	131 084	129 068	107 758	127 819	130 209

Continued from p. 15

	Round 5	Round 6	Round 7	Round 8	Round 9	Perm. variables
In comparison with previous year, %	–	78.9	98.5	83.5	118.6	–
Median real equivalent income of a household, rubles (1994 — base)	110 705	83 512	87 927	72 780	80 921	96 366
In comparison with previous year, %	–	75.4	105.3	82.8	111.2	–
σ of real equivalent expenditures, as % to corresponding mean	1.13	1.36	1.12	1.38	1.42	0.87
GINI coefficient of per-capita expenditure distribution	0.4494	0.4530	0.4573	0.4476	0.4542	0.3647
σ of real equivalent incomes, as % to corresponding mean	1.23	1.65	1.37	1.60	1.54	0.94
GINI coefficient of equivalent income distribution	0.4802	0.5103	0.5486	0.4729	0.4910	0.4040
Mean equivalent income as a percent of mean equivalent expenditures, %	59.0	59.4	62.7	65.1	70.4	62.1
Mean real equivalent income as a percent of mean real equivalent expenditures (excluding home production from expend.), %	76.3	78.4	81.0	85.1	84.9	79.6

Continued from p. 16

	Round 5	Round 6	Round 7	Round 8	Round 9	Perm. variables
Mean equivalent income of lowest 20% of distribution as a percent of mean equivalent expenditures of the same households, %	31.8	22.4	27.9	25.6	35.6	39.2
Mean equivalent income of top 20% of distribution as a percent of mean equivalent expenditures of the same households, %	91.8	85.6	92.4	93.6	92.9	97.1

Source: author's calculations.

The benefit of using household expenditures rather than income is also confirmed by the fact that the average level of equivalent income for the lowest 20 percent of the corresponding distribution is only about 30 percent of the expenditure level of these households. For households constituting the top 20 percent of the equivalent income distribution, the differences between mean equivalent income and mean equivalent expenditure is only around 5 percent.

Nevertheless, there are several other difficulties associated with the measurement and the adequate definition of persistent poverty. First of all, the estimation of household expenditures, as well as the estimation of household income, are subject to measurement errors because respondents may forget some expenses they had during the reference period, and thus underestimate the true level. This is espe-

cially apparent for larger households, where multiple people could have expenses.[6] Moreover, it is likely that the monetary estimate of subsistence agriculture contributes significantly to measurement error, and the direction of bias associated with this factor is difficult to predict.[7]

Second, monthly expenditures may include some expenses on non-regular items, for example, on durable goods such as furniture, appliances, or even motor vehicles and apartments. In order to take into account the non-durable character of such goods, RLMS constructors took three months as a period of amortization. However, it goes without saying that such goods cannot completely depreciate in three months. This is especially true in countries like Russia, where durable goods are used several times longer than in Western countries. Thus, many households, especially lower-income ones, still use goods (refrigerators, laundry machines, *etc.*) produced 10 or even 20 years ago. To exclude this factor of distortion, I deducted expenditures on durable products from household expenditures.

Even after correcting the data, which in this case deals mainly with the elimination of expenditures on durables, this investigation is not completely free from methodological caveats that concern mostly the adequate determination of the poverty profile for a chosen household.

Indeed, while studies of poverty in western countries usually use annual data on household welfare (which is mostly annual income), my data on expenditures (as well as on income) are based only on the month pre-

[6] Measurement error was found by Luttmer (2000) to explain 30 to 60 percent of the variance in expenditures. Although this is a rather appalling result, it should be treated with caution. Indeed, in his paper, Luttmer uses the household expenditure level as a proxy of its well-being, while he used two instruments (reported household income and subjective evaluation of its well-being) in order to estimate the magnitude of the measurement error. The intuition behind this approach is quite simple: namely, "common movement in all three proxies indicate changes in the underlying living standards while the deviations of one proxy from the other two indicates measurement error in this proxy." Nevertheless, instrument choice can dramatically distort the picture. Indeed, Ravallion and Lokshin (1995) show that there exists a "systematic inconsistency between a conventional objective measure and self-rated assessments," which, all other things being equal, make measurement error in Luttmer's definition to be overestimated.

[7] Nevertheless, it is incorrect to deduct the monetary estimate of self-sufficient agriculture from the aggregate expenditure level, given that such an estimate most likely contains a measurement error. This is because, as Table 15 shows, self-sufficient agriculture is a rather significant share of the household's total expenditures.

ceding the survey time. Such data might not adequately reflect household welfare (proxied by the level of household expenditures) during the other part of the year. Nevertheless, given that I cannot test the hypothesis that households with equal income levels can have different preferences of consumption depending on the time of year, I assume that these preferences are the same. Such an assumption should, of necessity, be made also at the single household level: namely, that a household has the same preferences in each RLMS round, *i.e.*, a decrease (increase) in household expenditures in some round is connected with a decrease (increase) in household welfare, not with a switch to another utility function.

In economic theory, one of the main characteristics of personal (household) expenditures is the smoothing of consumption paths in response to income shocks. This feature is incorporated in the widely used traditional life-cycle" or "permanent income hypothesis" models. The main postulates of these models are the division of personal (household) income into two components (permanent income and transitory income), and the maximization of the present value of life consumption. A logical inference from these models is that consumption should be more responsive to permanent shocks (shocks which have long-lasting effects) than to transitory shocks (*i.e.*, shocks whose effect disappears over a short period). If this is the case, the expenditure path should be relatively stable, which suggests that the whole set of households could be principally divided into two subsets: households that are poor during the whole period of observations and households that are not poor during that period. The remaining category of households changing their poverty status (*i.e.*, those households that fall into and/or escape from poverty during the period of observation) should be relatively small.

However, this conclusion does not appear to hold in reality. Luttmer (2000) showed that 86 percent of shocks affecting household expenditures are transitory, while transitory shocks constitute 90 percent of all shocks in a household's income level. This figure is quite high, even if we assume that part of the shocks are conditioned only by measurement errors. This suggests that the traditional life-cycle/permanent income hypothesis model is not applicable for Russia. Additional arguments in favor of this conclusion are given by Stillman (2001), who studies the consumption response by Russian households to economic shocks. Studying the effects of four exogenous shocks (changes in oil price, changes in exchange rate, community-level variations in wages, and pension arrears[8]) on the pattern of household incomes, Stillman (2001)

[8] Most evidence indicates that all the shocks Russia was exposed to during 1994–2000, including the August 1998 crisis, were transitory.

shows that a household which experiences an exogenous shock equal to 10 percent of its total income changes both its food and total non-durable expenditures by 7 to 11 percent. A possible explanation for the lack of expenditure smoothing in Russia is the existence of liquidity and credit constraints. Indeed, unlike developed western countries, where lending to the public is widespread and deposits from the population play an important role in the formation of bank liabilities, in Russia lending to the public virtually continues to be inaccessible to most people or unattractive, due to high interest rates.

Taking into account the lack of expenditure smoothing in Russia, the problem of investigating persistent poverty becomes sufficiently simpler. Actually, we can model patterns of poverty using information about household expenditures if we base the analysis on information about incomes (which are correctly assessed), dividing expenditures into permanent and transitory components. While measurement errors will still exist, there is little we can do about this, apart from treating the obtained results with caution.

One more aspect that should be given attention while studying persistent poverty is the aspect of wage arrears. As was argued recently by Lehmann and Wadsworth (2001), "for those wishing to study aspects of wage differentials and inequality in Russia, it may be feasible to use the subset of those not in arrears and still go close to population parameters." Indeed, assuming that the experience of wage arrears is random (as was shown by Earle and Sabirianova, 1999), and that counterfactual estimates of wage distributions in the absence of arrears resemble the actual distribution of those who do not experience arrears (as was shown by Lehmann and Wadsworth, 2001), it is fairly reasonable to estimate individuals' persistent poverty via a relative approach using only the non-arrears income distribution.

Nevertheless, it may seem unjustified to distinguish households with members suffering from wage arrears from other households, or even to somehow restrict the sample by throwing out such households. There are two major factors in support of this idea. First, I investigate poverty using expenditures rather than income as a proxy for wealth. This allows me to include into household expenditures possible expenditures on goods paid "in kind" or money received from selling "in kind" payments.[9] Second, I investigate poverty at the household level and not at the individual level, which means strategies that household resort to in order to avoid poverty should be taken into account. In particular, I can

[9] In all likelihood it seems that people receiving "in-kind" payments were considered as those with wage arrears in the Lehmann and Wadsworth paper.

assume that one of the reasons individuals do not quit working for an enterprise that does not pay salaries on time is that their household members receive wages sufficient to feed the household.[10] As indirect evidence in support of this assumption, I can state that there are virtually no households in my sample in which two or more people argued that they suffered from wage arrears.

The sample used in this paper therefore consists of households including persons with wage arrears, as well as households of which all members were fully paid on time.

4.2. Choice of equivalence scale

A substantial difference between the estimation of poverty at the individual level and at the household level is the fact that the latter should take into account economies of scale resulting from joint housekeeping. This relates mainly to the joint consumption of household goods (for example, household members can share one refrigerator, laundry machine, *etc*.), and to a reduction of per-capita expenditures on utilities. In the case of Russia, additional economies of scale result from sharing clothing (for example, when younger children wear the clothing of older children) as well as price discounts on wholesale purchases of food.

One methodology that allows for the comparison of welfare levels of households where different structures are compared is the so-called "equivalence scales approach" (Barton, 1964, Deaton, Muellbauer 1980). Under this approach, a household that consists of k different demographic categories (each consisting of n_i persons) and that has aggregate objective welfare level Y (in this case, this is the household consumption level), has an equivalent consumption Y_{eqv} given formula

$$Y_{\text{eqv}} = \frac{Y}{(\sum_{i=1}^{k} \alpha_i n_i)^{\theta}} .$$

In this equation, parameter θ measures the strength of household economies of scale, while the coefficients α_i account for differences in consumption levels between different categories of households.

[10]The main reason why employees do not quit working for enterprises that pay them in arrears is low labor force migration, which is especially apparent outside the big cities. (See, *e.g*., Lehmann, Warsworth and Acquisti, 1999, and Grogan and Gerard, 1997).

Unfortunately, official statistics collected by Goskomstat do not fully account for household economies of scale. While it ascribes different coefficients to nutritional needs for different age groups, it fails to consider economies of scale (*i.e.*, it is assumed that $\theta = 1$). This results in an overestimation of the number of poor households.[11] Korchagina, Ovcharova, Turuntsev (1998) show that poverty levels calculated by Goskomstat, using the criterion of the availability of the basket of goods, is overestimated by 8 to16 percent, depending on the year.

Several researchers have attempted to construct equivalence scales for Russia. Apart from the work by Korchagina, Ovcharova, Turuntsev (1998), papers by Lanjouw, Paternostro, Milanovic (1998) and Ravallion and Lokshin (1998) should be mentioned.

Lanjouw, Paternostro, and Milanovic (1998) estimate an economies-of-scale coefficient for seven transition countries from Eastern Europe and the former Soviet Union, including Russia, using a simplified Barten model. They find that $\theta = 0.7$ for Russia, which they claim is a critical value because, given this value, the "relative poverty of the elderly households tends to rise more rapidly than the incidence of poverty declines among households with a high child ratio."

Ravallion and Lokshin (1998) find a much lower estimate of the equivalence scale for Russia, *i.e.*, $\theta = 0.4$. Such a strong economy of scale effect[12] is likely due to the fact that they use subjective poverty estimates.[13] In many cases, subjective and objective poverty indicators contradict each other. In particular, respondents' own estimates of their level of welfare are substantially biased downward, and such bias is typical even for those households that have a relatively high level of objective welfare. The reason for such bias could be voluntary underreporting of true information in the hope of that answers could somehow affect their eligibility for social help. The answers could also reflect "irrationality or incapability for rational choice" (Ravallion and Lokshin, 1998).

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[11] Calculations of poverty levels in Russia are performed by Goskomstat on the basis of the availability of a minimal basket of goods. Consumption by children and consumption by elderly people are weighted with coefficients 0.9 and 0.63, respectively (with adult consumption equal to 1).

[12] This means that, ceteris paribus, the consumption of $1 by a household consisting of 1 person is equivalent to the consumption of $4 by a household consisting of 10 people.

[13] In the RLMS, the subjective level of household welfare is estimated on the basis of answers to the following questions: "Please, imagine a 9-step ladder, there on the bottom, (the first step), stand the poorest people, and on the highest step, (the ninth) stand the rich. On which step are you today?"

A widespread tool used to determine the effect of household economies of scale is the Engel model, proposed as early as 1895 (and elaborated by Barten, 1964). The main assumption underlying the Engel model is that households with equal welfare levels have equal shares of expenditures on food in aggregate household expenditures. This assumption is based on differences between the consumption of private goods, which are consumed individually by each household member (*e.g.*, food), and the consumption of public goods, which can be shared, and on modeling the aggregate utility of the household from consumption of private and public goods. The unquestionable advantage of the Engel model is its simplicity. That is, in order to estimate the model, only one demand equation is required, usually expressed as the share of food in total household consumption as a function of several factors. An additional advantage is that the model can be estimated on a single panel of cross-section data and does not require adjustments for price variations.

Although the Engel model is still the most popular tool for investigating the effects of economies of scale, it has recently been subjected to criticism. First, the assumption on which this method is based is controversial itself. Deaton (1997) pointed to the lack of identification of the Engel approach by showing that two cost functions that face the same utility level can lead to the same Engel curve. In addition, one of the main conclusions drawn from the Engel model, namely, that "the larger household with the same per-capita expenditure as a smaller household should have a lower food share" was empirically rejected by Deaton and Paxson (1998), who found an inverse effect, especially for poor countries.[14]

Not having found an alternative that is free from methodological contradictions, I use the Engel model in this paper to analyze the effect of economies of scale for the following representation:

$$w_i = \alpha + \beta \ln\left(\frac{y_i}{n_i^{\theta}}\right) + \sum_{i=1}^{5} \mu_i \eta_i + \varepsilon_i = \alpha + \beta \ln\left(\frac{y_i}{n_i}\right) + \beta(1-\theta)\ln(n_i) + \sum_{j=1}^{5} \mu_j \eta_{ij} + \varepsilon_i \,,$$

where w_i — share of food consumption in aggregate expenditures of household i, y_i — expenditure level of household i, n_i — number of

[14] To do justice, we should note that the results obtained by Deaton and Paxson, which we call "the paradox of Deaton and Paxson," in many respects are due to measurement error as well as to the estimation method chosen. Using pooled regressions instead of separated regressions, Gan and Vernon (2001) resolve the paradox of Deaton and Paxson, showing that the share of household expenditure decreases when the household size increases.

members of a household, η_{ij} — share of representatives of group *j* in the number of members of household *i*.

In my case, I use 5 demographic variables:

shcat1_*n* — Share of children under 7 in round *n*;

shcat2_*n* — Share of children from 7 to 18 in round *n*;

shcat3_*n* — Share of working-age males in round *n*;

shcat4_*n* — Share of working-age females in round *n*;

shcat6_*n* — Share of post-working-age females in round *n*.

Variable shcat5_*n* (share of post-working-age males in round *n*) was taken as a reference variable.

When testing such models, the estimate of the economies of scale effect θ is defined as $\theta = 1 - \beta_2 / \beta_1$ (where β_1 is the coefficient estimate for the variable $\left(\frac{y_i}{n_i}\right)$, and β_2 is the coefficient estimate for the variable $\ln(n_i)$). The standard deviation is determined by using the Delta-method and is given by the formula

$$\sigma_\theta = \sqrt{\begin{bmatrix} -\frac{1}{\beta_1} & \frac{\beta_2}{\beta_1^2} \end{bmatrix} \begin{bmatrix} \mathrm{var}(\beta_2) & \mathrm{cov}(\beta_1\beta_2) \\ \mathrm{cov}(\beta_1\beta_2) & \mathrm{var}(\beta_1) \end{bmatrix} \begin{bmatrix} -\frac{1}{\beta_1} \\ \frac{\beta_2}{\beta_1^2} \end{bmatrix}}.$$

This model can be estimated using OLS. However, because the expenditure level is measured with errors, the main contributor to these errors is home production; the estimate of β_1 will be biased toward zero, as Deaton and Paxson (1998) show. Moreover, since both the share of expenditures on food and per-capita consumption are based on the household's own estimation of its level of consumption, the measurement errors w_i and $\left(\frac{y_i}{n_i}\right)$ will be correlated. Therefore, to obtain unbiased estimates, I used an instrumental variables approach (IV), choosing the logarithm of per-capita income as an instrument for the logarithm of per-capita expenditures. Indeed, on the one hand, household income is highly correlated with household expenditures. Moreover, because the measurement of household expenditures is different from the measurement of household income (when measuring the latter parameter, I dis-

carded the monetary equivalent of subsistence agriculture), it can be assumed that measurement errors for these parameters will not be correlated with each other.

I estimated this model for each of the 5 rounds separately, as well as with pooled data for all 5 rounds. In order for expenditure levels to be comparable for different Russian regions, to estimate the pooled regression I deflated the level of household expenditures on corresponding regional prices for the corresponding survey time. Thus, I expressed incomes and expenditures of households in prices of December 1994. The main results are presented in Table 4.

Table 4. Equivalent-scales analysis for five rounds of the cross section data and for the pooled data.

Variable	Round 5	Round 6	Round 7	Round 8	Round 9	Pooled data
$\ln(y_i / n_i)$	−0.159***	−0.087***	−0.139***	−0.141***	−0.161***	−0.104***
	(0.008)	(0.004)	(0.008)	(0.009)	(0.008)	(0.005)
$\ln n_i$	−0.009	0.006	−0.043***	−0.033***	−0.042***	−0.018***
	(0.011)	(0.009)	(0.011)	(0.011)	(0.010)	(0.005)
Shnc1_5	−0.030***	−0.028***	−0.027***	−0.029***	−0.031***	−0.025***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.006)	(0.009)
Shnc2_5	−0.016***	−0.018***	−0.014***	−0.019***	−0.025***	−0.017***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)
Shnc3_5	−0.083***	−0.066***	−0.034	−0.078***	−0.071***	−0.066***
	(0.023)	(0.021)	(0.024)	(0.024)	(0.021)	(0.014)
Shnc4_5	−0.076***	−0.087***	−0.086***	−0.077***	−0.069***	−0.085***
	(0.024)	(0.022)	(0.025)	(0.025)	(0.021)	(0.012)
Shnc6_5	−0.083***	−0.046***	−0.049***	−0.136***	−0.098***	−0.063***
	(0.024)	(0.022)	(0.025)	(0.025)	(0.022)	(0.012)
_cons	2.765***	1.922***	2.605***	1.741***	1.95***	20.015***
	(0.107)	(0.058)	(0.112)	(0.064)	(0.062)	(0.061)
θ	0.944	1.072	0.670***	0.763***	0.742***	0.827***
	(0.107)	(0.190)	(0.089)	(0.105)	(0.062)	(0.058)

Source: author's calculations based on the RLMS data.

From this table we can see that the results of the first two rounds do not statistically reject the hypothesis of no household economies of scale. That is, testing the null hypothesis $\theta = 1$ with a Wald test shows that the parameter θ is undistinguishable from unity at the 5 percent significance level. However, for rounds 7, 8 and 9 of the RLMS, as well as for pooled regressions, the null hypothesis $\theta = 1$ can be rejected. A potential rationale for the obtained result could be the higher level of measurement error in earlier RLMS rounds. Moreover, the differences between the first two and the last three rounds could be due to differences in households' behavior in different RLMS phases. Unfortunately, these hypotheses cannot be proved.

Nevertheless, the high statistical significance of the coefficients obtained when testing the Engel model on pooled data might be considered as a solid argument in favor of the existence of household economies of scale in Russia. Therefore, in further investigations I calculate the equivalent level of expenditures using results obtained for pooled regressions. On the basis of the obtained results, I can state that the expenditure level of a household consisting of two people belonging to the same category is equivalent to 1.77 times the expenditure level of one such person, while the expenditure level of a household consisting of four people belonging to the same category is equivalent to 3.15 times the expenditure level of one person, *etc*. Moreover, the results allow us to compare differences in needs for different categories. The results obtained for the pooled regression give rise to the following table.

Table 5. Difference in needs for different categories (compared with that for an adult man).

Children below 7	Children from 7 to 18	Adult man	Adult woman	Elderly man	Elderly woman
0.67	0.62	1.00	1.20	0.53	0.97

Source: author's calculations.

These results indicate that the difference in needs for adults exceeds that for elderly persons, which confirms the statement that elderly people have a lower level of physiological needs compared with adults. The results also show that differences in needs for women exceeds that for men, which could mean that Russian women spend more on clothing, cosmetics, *etc*. In addition, my calculations show that the needs of children, both below and above 7, constitute about 65 percent of an adult's needs on average.

4.3. Choice of poverty line

Another important problem in poverty studies is the choice of an appropriate poverty line. In the literature on poverty, especially in studies devoted not to investigation of poverty scales in various countries, but to the very concept of poverty itself (Sen, 1983; Shorrocks, 1978), a great deal of attention is given to the choice of poverty line.

Indeed, the very notion of poverty presupposes some relativity and ambiguousness of interpretation, as a person or a household can be "richer" or "poorer" only relative to another person or household. The researcher's main task is to find that person or household whose welfare could be taken as a separating point between two categories and to investigate the characteristics of those households whose welfare is lower than the "separating line."

There are two prevailing approaches in calculating poverty lines:[15] the absolute approach and the relative approach. Within the scope of the first approach, a poverty line is modeled on the basis of either availability of some bundle of essential goods for a household, the so-called "consumer basket," or on the basis of some internationally comparable level of income/expenditures (for example, 4 dollars a day of per-capita income, as defined by the World Bank), which is usually used in country comparisons.

Under the relative approach, households whose income/expenditures belong to the lowest part of the distribution of income/expenditures are considered "poor."[16] For instance, households whose per-capita income/expenditures belong to the lowest 20 percent or 10 percent of the distribution of per-capita income/expenditures, or those households whose per-capita income/expenditures are lower than half of the median

[15] Both these approaches are related to the objective definition of poverty, on the basis of which are some measurable characteristics (for example, income level or expenditure level) that assigns some threshold that divides the whole population into poor and non-poor. In addition, there exists the so-called subjective approach, which is based on subjective estimation by a person of his welfare. Although both approaches are used in poverty investigations (the objective approach dominates), in my opinion there exist substantial difficulties related to the problem of identification in applying the subjective approach to the situation in Russia. Most such difficulties are described in Ravallion and Lokshin (1998).

[16] Actually, this approach means that regardless of how high is the welfare level of the population, regardless how far it is from the somehow calculated absolute poverty line (for example, on the basis of information about the availability of the basket of goods), there always exist people or households (called poor) whose welfare is lower than that of the others.

(OECD methodology) could be regarded as "poor." The latter definition is more appropriate as it enables us to relate the concept of poverty to inequality. It is this approach that is implemented in this paper.

Official statistics on poverty in Russia, collected by Goskomstat, are based on the absolute approach to the construction of poverty lines, and calculate the so-called subsistence level of a person in terms of the value of the minimal food basket,[17] nonfood goods and services, taxes and obligatory payments. Accounting for differences in the minimal necessary number of calories and other components of the subsistence level for people of different ages leads to the conclusion that childrens' needs are equal to 90 percent of adults' needs, while the needs of elderly persons are 63 percent of adults' needs. Moreover, Goskomstat neglects the influence of equivalence scales (*i.e.*, they assume $\theta = 1$), which likely biases their estimates of poverty depth towards big households. A more detailed description of the scale used by Goskomstat can be found, for example, in Korchagina, Ovcharova, and Turuntsev (1998), or at the official Internet site of Goskomstat.

Statistics of poverty depth calculated on the basis of the RLMS data for regional poverty lines constructed by Goskomstat are presented in Table 6. We see from this table that the share of poor households rose

Table 6. Comparison of poverty depth for absolute and relative poverty lines.

Share of poor households under different definitions of poverty line	Round 5	Round 6	Round 7	Round 8	Round 9
Share of poor households calculated on the basis of regional poverty lines determined by Goskomstat, %	24.2	29.7	34.7	43.6	32.5
Share of poor households calculated on the basis of regional poverty lines determined by Goskomstat, using equivalence scales, %	21.0	25.4	30.2	38.7	27.1
Share of poor households below the relative poverty line, %	17.8	17.5	19.4	17.4	18.5

Source: author's calculations based on RLMS data.

[17] This is calculated on the basis of the minimum necessary quantity of calories, taking into account dietary restrictions for different ages and different regions.

during 1994–1996 (from 24 percent to 34 percent), increased sufficiently in 1998 (up to 44 percent), and slightly fell in 2000 (down to 32 percent). Moreover, it follows from the table below that if we use the equivalence scale, then the share of poor households decreases by 3 to 7 percent depending on the year.

Like the official authorities, most of the studies investigating poverty in Russia (including Klugman, 1995; Korchagina, Ovcharova, and Tsuruntsev, 1999; Braithwaite and Ivanova, 1998) maintain an absolute approach and determine the poverty line on the basis of the notion of subsistence level and availability of the consumer basket, whereas little attention is given to relative poverty. A few words should be said in favor of using this concept for Russia.

Indeed, the notion of "relative poverty" is very sensitive to how unequally incomes or expenditures are distributed among households in the lowest part of the income range. Comparing the level of relative poverty in Russia with corresponding levels in other countries (Table 7), we see that

Table 7. Comparison of relative poverty.

Year	Country	Percent of poor
1992	Belgium	5.5
1994	Canada	10.6
1992	Denmark	6.9
1994	Germany	11.4
1992	Israel	12.5
1994	Turkey	14.7
1995	Italy	12.8
1995	Poland	11.2
1994	United Kingdom	10.6
1994	United States	17.9
1994	Russia	17.8
1995	Russia	17.5
1996	Russia	19.4
1998	Russia	17.4
2000	Russia	18.5

Source: Luxembourg Study/Center for the Study of Population and Public Policy/INSTEAD database. All poverty lines are drawn at 50 percent of the annual median disposable income per equivalent adult.

Turkey: Ruslan Yemtsov's calculations.

Russia: author's calculations at 50 percent of the annual median disposable expenditures per equivalent adult.

the level of relative poverty in Russia is higher than in the OECD-member European countries. This indicates that Russia is a country with high inequality, which is another concern.

An important advantage of using the relative method of poverty determination over the absolute method is the universality of the former. That is, the relative method is more flexible to systemic economic shocks, such as rapid growth or decline in the real income of households. Using this approach is especially justified in this case since round 8 of the RLMS includes December 1998, when the consequences of the August 1998 crisis were especially apparent. When using the relative concept of a poverty line, we can focus on exactly those households that under any systemic shocks stay in the lowest part of the expenditure (income) distribution.[18]

Table 8 presents the major measures of poverty and inequality equivalent expenditures of households. We see that inequality gradually increased from 1994 to 1996. Moreover, it rose within the poor groups (as represented by the increase in the generalized entropy coefficients[19] $GE(-1)$ and $GE(0)$), as well as within the rich groups of the population (increase in $GE(1)$ and $GE(2)$). However, the picture of inequality changes in 1998, the crisis year. Indeed, we can see that the level of inequality somewhat decreases, which is mainly due to more equal consumption among the poorest group of the

[18] It should be noted that under the relative approach to the construction of poverty lines, the number of households that are poor in all rounds is less than when poverty is determined using the absolute approach. The difference between the number of households with expenditures below the official poverty line and the number of households that are poor according to the relative approach is especially sizable for 1998, which is associated with the depreciation of households' incomes during the hyperinflation invoked by the ruble devaluation in August 1998.

[19] The Generalized Entropy measure equals

$$GE(c) = \frac{1}{Nc(c-1)} \sum_i \left(\left(\frac{x_i}{\mu} \right)^c - 1 \right) \quad c \in R,$$

where N is the size of the population, μ is mean income, and x_i is the income of individual i. In the case of $c = 0$, we have

$$GE(0) = \frac{1}{n} \sum_i (\ln \mu - \ln x_i),$$

which is the mean log deviation. When $c = 1$,

$$GE(1) = \frac{1}{n} \sum_i \frac{x_i}{\mu} \ln \frac{x_i}{\mu},$$

which is the Theil index.

population (indices *GE*(−1) and *GE*(0) decrease),[20] nevertheless, the index *GE*(2) for 1998 is much higher than that for 1996, which shows that the inequality of expenditures among rich households still increased further.

Table 8. Main measures of inequality and poverty.

Measure	Round 5	Round 6	Round 7	Round 8	Round 9	Permanent variables
GINI	0.4494	0.4530	0.4573	0.4476	0.4542	0.3647
GE(−1)	0.4657	0.5615	0.6035	0.5799	0.5484	0.2529
GE(0)	0.3438	0.3723	0.3770	0.3741	0.3673	0.2204
GE(1)	0.3662	0.3911	0.3839	0.3965	0.4161	0.2456
GE(2)	0.5243	0.6082	0.6322	0.7675	0.8452	0.3760
Headcount ratio, %	17.78	17.54	19.37	17.45	18.48	11.30
Income gap ratio, %	31.95	30.18	36.66	36.08	31.82	21.96
Index *FGT*(2.0)[21],×100	2.82	2.43	3.77	3.26	2.83	0.87
Sen index[22],×100	8.54	8.45	9.60	8.42	8.99	4.30

[20] The decrease in inequality among the poorest households is partly due to the revaluation of subsistence agriculture during post-crisis hyperinflation of end-1998. Indeed, the RLMS data indicate a reallocation in the structure of expenditure on food: an increase in consumption of subsistence agriculture is accompanied by a smaller decrease in the consumption of purchased food. The increase in the share of subsistence agriculture is especially significant for the category of the poorest households (lowest 20% of the equivalent expenditure distribution) and less sizable for the richest households (highest 20% of the equivalent expenditure distribution). The components of expenditures (including expenditures on durables) are presented in the appendix, Table 15.

[21] The Foster–Greer–Thorbecke Index is

$$FGT(c) = \frac{1}{N}\sum_{n}\left[\frac{Z - Y_i}{Z}\right]^c,$$

where Y_i is the equivalent per-capita expenditure of household, Z is the poverty line, N is the population size, n is the number of poor. When $c = 0$,

$$FGT(o) = \frac{n}{N}$$

is the headcount ratio, while when $c = 1$,

$$FGT(c) = \frac{1}{N}\sum_{n}\left[\frac{Z - Y_i}{Z}\right],$$

which is the income gap ratio.

[22] The Sen index is $P = H[\mathrm{I} + (1 - I)G]$, where H is the head-count ratio, I is the income gap ratio, and G is the GINI coefficient

5. METHODOLOGY

A classic study devoted to the investigation of persistent poverty is the one by Bane and Ellwood on persistent poverty among American households that was published far back in 1986. The significance of this paper lies not in the results obtained,[23] which are no doubt exciting but, rather, in that the authors presumably were the first to investigate persistent poverty using survival analysis.[24] Further investigations of poverty on the basis of duration-data analysis were conducted by Devicienti (2000), Canto Sanchez (1998), Haff Svetens (1995) and many other researchers.

One of the major advantages of survival analysis is that it allows one to determine the persistence of poverty, *i.e.*, to investigate how much the preceding time of being in poverty increases or decreases the probability of remaining in poverty. Nevertheless, this methodology requires one to make some assumptions about the dependent variable, which substantively restricts the applicability of this approach. The main assumption behind survival analysis is the requirement of continuity of the dependent variable (which in the case of poverty analysis is the duration of time in poverty). Most of the researchers of persistent poverty used data in which information about income/expenditures and changes in the main household characteristics were aggregated for the period between two successive rounds. In other words, they dealt with annualized income/expenditures when data was collected once per year; with quarterly income/expenditures when data was collected every quarter, *etc*. Moreover, they had a long enough panel, which allowed them to effectively avoid the problems of left and right censoring. In this case, the assumption of continuity of the dependent variable, expressing the duration of staying in/out of poverty, seems justified.

Since the RLMS data are based on expenditure levels for the month preceding the survey time, not the whole year, I actually have five discrete observation points. I also have two lags in the data, as the survey was not conducted in 1997 and 1999. The use of the approach of duration

[23] The main results of that paper are the determination of the average duration of poverty, depending on the reason of falling into poverty, and the investigation of major entry and exit events.

[24] So far, long-term poverty has been modeled mainly on the basis of Friedman's decomposition of income into permanent income and transitory income. A household is considered long-term poor if its permanent income is lower than a certain level, and transition dynamics between poverty and non-poverty are incorporated into the error structure. (See, *e.g.*, Lillard and Willis, 1978; Levy, 1977; and Gottschalk, 1982).

data analysis in this situation would be reduced to the assumption that a household that was poor at the moment that a certain round was conducted is considered poor during the whole year in which that round was conducted. Moreover, in a case with lags, it would mean that I have to suppose additionally that a household that was poor in December 1996, at the moment that round 7 was conducted, was poor not only during 1996, but also during 1997, and, similarly, that a household that was poor in November 1998, at the moment of conducting round 8, was poor during both 1998 and 1999. Clearly, these assumptions seem too strong, and in fact incorrect. In particular, the extension of poverty from December 1996 into both 1996 and 1997, and from November 1998 into both 1998 and 1999 seems to result in an overestimation of poverty duration.

Given the available data, an alternative to poverty duration analysis is the use of multiple choice models. The advantage of multiple choice models is that such models are convenient for investigating discrete data and do not require continuity of the dependent variable.

Unlike simple probit and logit models, where the dependent variable can take only two values, multiple choice models allow the dependent variable to take more than two values. Like in the case of binary choice models, the choice of specific model depends on the assumption about the distribution of errors. However, since the construction of an equivalent to a probit model for the case of multiple choice is necessarily reduced to the calculation of multiple integrals, the most widespread models used are multiple choice models of the logit type.

Models of multiple choice are divided into unordered choice models and ordered choice models. The difference between these two models is that in the latter case the dependent variable is ordered. For example, it can characterize the number of times a person falls into a certain state.[25] In this case, given that we have an ordering on poverty "depth,"[26] it seems natural to use ordered logit models.

The simplest method is to model the number of times a household falls into poverty (using a scale from 0 to 5). Although this method is rather appealing, some difficulties can arise with the interpretation of the results. That is, when the dependent variable measures the number of times a household was poor, I am unable to distinguish between some-

[25] For example, a classical situation when a multinomial logit model is used is the modeling of the choice of a sport (swimming, jogging, athletics) depending on the characteristics of a person. An example of ordered logit analysis is to model the choice of the number of academic courses as a function of GPA, *etc*.

[26] That is, we have an ordering from "non-poor" to "persistently poor," with one or more intermediate values.

one who was poor in several subsequent rounds (persistent poverty), and someone who was poor every other year (temporary poverty). Other methods based on direct counting of the number of times a household was poor[27] have the same drawback.

Another approach for constructing the dependent variable would be on the basis of poor/non-poor profiles, as was done in the paper of Braithwaite and Ivanova (1998). However, in this case, this would lead to $2^5 = 32$ different profiles, which would significantly reduce the number of observations per profile, and therefore would not allow us to derive any statistically significant conclusions.

In this paper, I follow an approach that does allow me to distinguish between persistent and temporary poverty, *i.e.*, the decomposition proposed by Jalan and Ravallion (1998). First, I determine the permanent level of welfare of a household (which in this case is measured by household expenditures), using the formula

$$E_{\text{perm}} = \frac{1}{5}\sum_{i=1}^{5} E_i^{\text{equiv}}$$

(where E_i^{equiv} is the level of household expenditures in round i, taking into account the equivalence scale used in this paper). Second, I define the permanent poverty line z_{perm} as half the median of the corresponding distribution of variable E_{perm}. Finally, I determine the poverty level of a household in each round, comparing the equivalent expenditures of a household in round i, E_i^{equiv}, with half the median of the distribution of equivalent expenditures in that round.

Table 9 summarizes the statistics of the distribution of households around the permanent poverty line, given the number of times a household was below the poverty line in a particular round.

Given the household position over the permanent poverty line and its poverty statistics by rounds, the simplest construction of the dependent variable would be as follows. First, it is reasonable to consider a household non-poor if it did not fall into poverty in any of the five rounds (accordingly, its permanent expenditure level is higher than the permanent poverty line). Second, if the permanent household expenditure level is

[27] For example, if we assume that a household is temporarily poor if it was poor for less than two years and is poor in the long-term if it was poor for more than two from five years.

Table 9. Definition of different poverty profiles.

	Below the permanent line	Above the permanent line
No times in poverty	0	1113
One time in poverty	7	456
Two times in poverty	59	214
Three times in poverty	94	57
Four times in poverty	93	11
Five times in poverty	41	0

higher than the permanent poverty line, and a household was poor only in one or two out of five rounds, I consider such a household to be "temporarily poor." Third, if the permanent household expenditure level is lower than the permanent poverty line, and a household was poor in most (more than two) rounds, I consider such a household to be "persistently poor."

Given these definitions, I can distinguish two more groups, *i.e.*, (1) households with a permanent expenditure level higher than the permanent poverty line and which were in poverty in most rounds, and (2) households with a permanent expenditure level below the permanent poverty line and which were not poor in most rounds. Households that had relatively high transitory expenditures in one or two rounds belong to the first category. Households that had relatively low transitory expenditures in one or two rounds belong to the second category. In this paper I will denote both these categories as "households with volatile expenditures near the poverty line."

Although this division is quite simple and dictated by the data, it has one major drawback, namely, it does not take into account a possible truncation of the data. Indeed, one should always keep in mind the fact that conclusions are being derived about the permanent status of the well-being of a household based on only a five-round sample. In addition, one can observe a family that was poor only during the first or last round and conclude that it is not in the bottom of the distribution according to the permanent poverty scale; in reality, this family could be poor over a long period of time, before or after the observation took place.

Table 16 shows the transition probabilities for poverty statuses calculated by using pooled data. We can see that being non-poor in one round

means that a household has an 87 percent probability that it will stay out of poverty in the next round. On the other hand, a household that is poor during one round will continue to be poor in the next round only in 44 cases out of 100. Nevertheless, if a household was poor for two subsequent rounds, the probability of it staying in poverty for at least the next two years is 36 percent, and the probability of staying in poverty for at least one more year is 76 percent.[28] While household poverty can thus be volatile on a year-by-year basis, which most likely can be explained by measurement errors (Luttmer, 2000), it seems to demonstrate persistency if we look at longer periods.

Having the results of Table 16 in mind, I can improve the division on poverty profiles by reducing the population of the category "households with volatile expenditures near the poverty line." Indeed, since the expectation of staying in poverty after (as well as before) being poor for two years is slightly more than after one year, I will treat as "persistently poor" those who lie below the permanent poverty line and who were poor during the first or last two years. This will give the following distribution among different poverty profiles.

Table 9. Definition of different poverty profiles.

Status	Number of households	Mean	Std. Dev.	Min	Max
Non-poor	1 113	216 723	190 058	63 996	2 341 657
Temporarily	670	104 843	53 815	57 629	741 322
Fluct. expend.	108	65 456	45 291	34 115	188 268
Persistently	254	39 430	12 576	12 511	57 551

Source: author's calculations.

Besides taking into account the truncation problem, the obtained division has the following advantages. First, the values of the dependent variable are ordered (from the point of view of average expenditures for a group), which justifies the choice of an ordered logit model. Moreover, the group

[28] The same tendency can be observed for the preceding two-year poverty spell. Namely, the probability of being poor for at least two years before a two-year poverty spell is 37 percent and to be poor for at least one year before the two-year poverty spell is 72 percent.

of households with "fluctuating expenditures around the poverty line"[29] is distinguished logically. Nevertheless, a disadvantage is the fact that this division of groups, including subgroups of households "with volatile expenditures near the poverty line," is essentially subject to the poverty line chosen.

In my specification, the dependent variable (poverty profile) can take the following values, depending on the household poverty profile: 0 for "non-poor," 1 for "temporarily poor," 2 for "households with volatile expenditures" and 3 for "persistently poor." By using the ordered logit model, I obtain similar expressions as in the case with simple binary choice models. First, we can write

$$y^* = \beta' x + \varepsilon ,$$

where y^* is unobservable. And additionally we can assume@

$$y = 0 \quad \text{if} \quad y^* \le 0,$$

$$y = 1 \quad \text{if} \quad 0 < y^* \le \mu_1,$$

$$y = 2 \quad \text{if} \quad \mu_1 < y^* \le \mu_2,$$

$$y = J \quad \text{if} \quad \mu_{J-1} < y^*.$$

In this model the μ's are unknown and can be estimated together with β. As in the case of binary choice models, the choice of an estimated model depends on the assumption imposed on the form of errors. The two models that are commonly used are probit and logit. If we normalize the mean and variance of ε to 0 and 1, both probit and logit specifications generate the following distribution:

$$\Pr(y = 0) = F(-\beta' x),$$

$$\Pr(y = 1) = F(\mu_1 - \beta' x) - F(-\beta' x),$$

$$\Pr(y = 1) = F(\mu_2 - \beta' x) - F(\mu_1 - \beta' x),$$

$$\Pr(y = J) = 1 - F(\mu_{J-1} - \beta' x).$$

where for all probabilities to be positive, we should set

$$0 < \mu_1 < \mu_2 < \ldots < \mu_{J-1} .$$

[29] It is clear that the category of "households with fluctuating expenditures around the poverty line" is greatly subject to the poverty line chosen.

Using a statistical package (*e.g.*, Stata), one can estimate the coefficients β and μ's. However, these coefficients themselves are difficult to interpret. To interpret the results obtained, it is convenient to switch from coefficients to marginal effects. For marginal effects we get

$$\frac{\partial \Pr[y=0]}{\partial x} = -\phi(\beta' x)\beta ,$$

$$\frac{\partial \Pr[y=1]}{\partial x} = \left[\phi(-\beta' x) - \phi(\mu_1 - \beta' x)\right]\beta ,$$

$$\frac{\partial \Pr[y=2]}{\partial x} = \left[\phi(\mu_1 - \beta' x) - \phi(\mu_2 - \beta' x)\right]\beta ,$$

$$\frac{\partial \Pr[y=J]}{\partial x} = \phi(\mu_{J-1} - \beta' x)\beta .$$

One could argue that it is difficult to determine which households are "persistently poor" on the basis of a relatively short panel of only 5 rounds. Indeed, most researchers of persistent poverty have called "persistently poor" (or "permanently poor") those persons or households that have lived below the poverty line for a much longer period of time.[30] Nevertheless, even with my short panel, it seems reasonable to assume that those households that were poor for at least three years and whose permanent level of expenditures was in the bottom part of the distribution are the households of the greatest concern, *i.e.*, the households which the government may choose to target by providing social assistance.

Some difficulties arise with the definition of independent variables. Given that the dependent variable is discrete, and accepts four values depending on the poverty profile into which a household falls, the independent variables should characterize the main characteristics of households during the whole period of observations. Thus, there is a question how to construct such a variable, which would describe some characteristic of a household for the whole period of observation. It is clear that in the case of time-invariant variables, such as

[30] For example, Bane and Ellwood (1986) considered as "permanently poor" those households that were in poverty for 9 out of 12 years; Hill (1981) regarded as long-term poor those households that stayed in poverty for 8 out of 10 years, and Coe (1978) considered as long-term poor those households which were in poverty every year during the period 1967–1975.

residence area, type of settlement, education of the head of the household, *etc*., such a problem does not arise.[31] Difficulties arise, however, when the independent variables have values that change from round to round.

To overcome these difficulties, several different approaches can be used. One possibility is to take only those households whose characteristics did not change during the whole period of observation. All other households in this case are regarded as a reference category. The main drawback of this approach is that the interpretation of the coefficients can be difficult, because we do not know the characteristics of the households belonging to the reference category.

A second possible method, used by Fouarge and Muffels (2000), is to consider time-varying variables at the beginning of a period of observation, which for this case would be round 5. Using this approach, however, would not allow for incorporating the dynamics of time-varying variables.

In this paper, I use an alternative, third approach. First, I construct dummy variables modeling various degrees of persistency for such time-varying phenomena as unemployment, wage arrears and bad health. For such variables, it is essentially important not only to consider the fact whether they are present, but also whether the phenomenon is temporary or persistent for the given household.

Other time-varying variables, for which, evidently, persistency does not play a significant role,[32] are measured at the moment of falling into poverty.[33] This allows us to take into account the characteristics of poor households, which would not be possible if the values of independent variables were determined at the beginning of the period of observation.[34]

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[31] The same can be said about variables that which change monotonously such as age of the head of a household.

[32] So it would be, at least, odd to model a variable characterizing the number of times when the size of a household changed during the period of observation.

[33] For non-poor households, round 7 data, which can be considered as the median of the RLMS, was taken.

[34] An apparent drawback of this approach is that it is not clear for which year the time-varying variables should be considered if a household fell into poverty more than one time. This can lead to biased estimations. In this paper I refer to the round in which poverty occurred for the first time.

6. RESULTS

Using the ordered logit apparatus, my aim was to investigate the major characteristics of households that are "persistently poor" and to compare these with the characteristics of households that are "temporarily poor" or have "fluctuating expenditures around the poverty line." All household characteristics (the independent variables used in the analysis) were divided into four classes, three of which refer to the characteristics of a household (*i.e.*, demographic, regional, and socioeconomic characteristics), while the fourth class represents the main characteristics of the head of the household.

The variables characterizing the type of household and its size were considered as demographic variables. For regional variables, I chose the residence area and type of a settlement (city or a village). Among socioeconomic characteristics, I distinguished variables responsible for the (persistent) presence of unemployed members in a household, members suffering from wage arrears, and members with serious health problems. In order to answer the question of how persistent poverty is related to the characteristics of the head of the household, I considered the following characteristics: the type of household head,[35] his or her education level, and primary occupation. Summary statistics of the variables used in the analysis are presented in Table 17 in the appendix.

The main results are presented in Table 18 (see Appendix). This table shows the marginal effects, standard deviations,[36] and p-values[37] of the ordered logit estimates. If a coefficient for some variable is statistically significant, this means that this variable influences the probability that a household is in one of the four categories. Nevertheless, the marginal effects of a change in a variable on the probability of being in one group can be different from the marginal effect on the probability of being in the other groups. Comparing the corresponding values and signs of the marginal effects, it is possible to understand the contribution of the various characteristics on the probability of being in a certain poverty profile. For example, I find a marginal effect of 0.054 for the category single adult with children who fall into temporary poverty, and a marginal effect

[35] In fact, in the given variable the sex of the head of the household and his/her age are incorporated.

[36] Evaluation of marginal effects is done in the sample means. Standard errors have their usual meaning: Plus/minus two standard deviations gives approximately a 5-percent confidence interval for marginal effects.

[37] P-values for ordered logit regressions have the same meaning as t-statistics in the simple OLS regression.

of 0.157 for the same category in the case they fall into persistent poverty. This means that single adults with children who fall into poverty are 0.157/0.054 = 2.9 times more likely to fall into persistent poverty as opposed to temporary poverty. The same comparison can be made for factors that reduce the incidence of poverty. Thus, according to Table 18, the coefficient for households living in Moscow is −0.156 for temporary poverty, and −0.093 for persistent poverty. This means that given that a household from Moscow falls into poverty, it is 0.156/0.093 = 1.7 times more likely to be persistently poor than temporarily poor.

6.1. Demographic characteristics

As we can see from Table 18, there is a close relationship between the various poverty profiles and the type of a household. I divided all households into six main groups: single adult, couple of adults, single adult with children, other households with children, single elderly person, couple of elderly persons, and other households which consist of adults and elderly persons, but not children. As a reference category I used single adults.

My analysis has shown that single elderly persons or couples of elderly persons living together are less susceptible to any poverty profile. This fact should be particularly emphasized and requires additional explanation, as it contradicts the traditional assumption that the elderly are one of the most vulnerable categories in modern Russia.

One may expect that the fact that the elderly are less susceptible to falling into either temporary or persistent poverty could be explained, at least partly, by my use of an equivalence scale, according to which the expenditures of elderly persons have lesser weight than that of adults. However, even if we do not discount the expenditures of elderly persons, the per-capita level of expenditures of elderly persons is only 5 to 10 percent less than the per-capita level of expenditures of adults. At the same time, the ratio of the declared level of expenditures to the declared level of income for the elderly categories is somewhat higher than the average value for the whole sample.[38] The fact that expenditures exceeds income for elderly persons is because they are more involved in self-subsistence agriculture[39] and (consciously or unconsciously) tend to underestimate their real level of income. Indeed, on average for five

[38] For the whole sample of households the declared level of expenses is 1.4 times higher than the declared level of incomes on average for all four rounds. However, for households consisting only of elderly persons the ratio is 1.8.

[39] Indeed, around 82 percent of elderly households are home producers.

rounds, about 79–87 percent of elderly people declared their pension as their only source of income, while it is plausible that a substantial share of them did have additional income that they did not indicate in their answers to the RLMS interviewers. Mainly, it was the gathering of things suitable for reuse or recycling or selling of consumer goods.

The greatest cause of concern (from the perspective of a government that wishes to reduce persistent poverty) is the categories of households with children and in particular single adults with children. The probability that single adults with children belong to one of the poverty profiles increases along the poverty scale. Thus, single parents with children have 1.7 times more probability of being in the category "volatile expenditures near the poverty line," and are 2.9 times more likely to be persistently poor as opposed to temporarily poor. Households from the category "other households with children" are more likely to be persistently poor as well. For them, the probability of being in persistent poverty is 61 percent higher than the probability of being in temporary poverty.

A plausible explanation for the higher incidence of poverty among single adults with children is the existence of limitations for this category on the labor market. From the side of labor supply, single parents typically prefer to work part-time, as it is necessary for them to take care of their children. However, the demand for part-time workers among employers is typically lower than the demand for full-time workers, thus resulting in a lower equilibrium wage for part-time workers than for full-time workers. Moreover, single parents may have to pay for child care, and therefore have higher expenditures than households with two parents.

Table 18 also shows that large households (in this case, households consisting of four or more members) have a higher chance of falling into poverty, and have a high probability of being persistently poor. More generally, we can see that the average size of a household grows when the degree of poverty increases (See Table 10). The average size of a non-poor household is equal to 2.53 persons; the average size of temporarily poor households equals 3.07; and the average size of persistently poor households equals 3.66.

The fact that the category "persistently poor" consists mostly of relatively big households may seem surprising given that big households should be benefiting from economies of scale. However, it is important to take into account not only the size of a household, but also its composition. Thus, if we look at the category of persistently poor households, we can see that for this category the dependency ratio (sum of children under 18 plus elderly, divided by the sum of adults) is the highest among all categories. This suggests that the main reason for their

persistent poverty is the presence of children and elderly people, who increase household expenditures but do not contribute much to household income.

Table 10. Relationship between poverty, household size and household dependency.

	Non-poor	Temporarily poor	Volatile expenditures	Persistently poor
Average size of a household	2.53	3.07	3.52	3.66
Dependency ratio[40]	0.69	0.73	0.73	0.82
Average share of children (in percent of household size)	18.1	23.2	25.3	28.9
Average share of elderly (in percent of household size)	21.7	15.9	15.2	10.2

6.2. Regional characteristics

In order to determine how different poverty profiles are related to the type of settlement or region where a household lives, I included into a regression a dummy variable which takes value 1 if a household is situated in a city, as well as 12 other dummy variables which characterize the region of residence.

The results are shown in Table 18 and suggest that the type of poverty differs by region. Falling into poverty (temporary, volatile expenditures, or persistent poverty) is less likely for residents of the two "rich cities," Moscow and St. Petersburg. For households from these two cities, the probability of falling into a certain poverty profile is negatively related to poverty depth. In particular, the probability of a household living in Moscow or St. Petersburg of being temporarily poor is 1.7 times lower than its probability of being persistently poor. The higher probability of incidence of persistent poverty in comparison to temporary poverty seems to be a consequence of the high polarization of incomes in these two "rich" cities, which is confirmed by the fact that the sample contains relatively few households in Moscow and St. Petersburg that are of the "temporarily poor" and "volatile expenditures" type.

[40] This is calculated as the sum of children under 18 plus elderly, divided by the sum of adults.

Inhabitants of the Central, North Caucasian, Povolzhsky and West Siberian regions are more likely to be poor, and in particular persistently poor, in comparison with residents from other regions. However, in comparison with other regions, households living in the Eastern-Siberian or Ural regions are less likely to fall into any type of poverty. For the Eastern-Siberian region, this may be a consequence of the fact that wages in this region tend to be higher than wages in other regions (Grogan and Gerard, 1997).

Overall, my results suggest that the probability of falling into any kind of poverty is lower for households from an urban area than for households from a rural area.[41] Moreover, for rural households the probability of being persistently poor exceeds by more than three times the probability of falling into temporary poverty.

6.3. Other household characteristics

Apart from demographic and regional characteristics, it was found that the following household characteristics substantially influence the different types of poverty: presence of unemployed members, presence of members with wage arrears, and presence of members with health problems. All these three characteristics affect the income of a person, and, thus, the income of a household to which this person belongs. Whereas wage arrears directly reduce a person's income in a given period, unemployment and health problems decrease the very ability to earn income.

In order to determine how unemployment affects persistent poverty, I constructed three variables, corresponding to the following cases: (1) a household did not have unemployed members in any of the five rounds; (2) a household had at least one unemployed member, but only in one round; and (3) a household had at least one unemployed member in two or more rounds. As a reference category, I take households that did not have any members belonging to the labor force, which I refer to as "non-working" households. In order to determine whether a person is unemployed, I use the evaluation given by people themselves when they answered questions about their employment status. A similar approach was followed when I construct variables characterizing the

[41] The RLMS constructors divided all households into three categories, depending on type of settlement: countryside, cities, and urban-type community. However, in this paper, I do not consider separately the third type of settlement. Indeed, although an urban-type community is a smaller unit than a city, lifestyles in cities and urban-type communities are almost the same.

presence of wage arrears in a household.[42] I define a person as being in wage arrears if the work done by this person in the pre-survey month was not paid in full.

It can be seen from Table 18 that households for which unemployment and wage arrears were observed in more than one round have more chances to be in any type of poverty compared with "non-working" households. However, the possibility of falling into any of the three poverty profiles for households with the presence of members with wage arrears is higher than for households with a presence of unemployed members. On the other hand, if a household had persons in wage arrears only in one round, its poverty was more likely to be temporary, not persistent. It is perhaps not surprising that households in which unemployment and wage arrears have a persistent character are more likely to experience poverty. However, what does seem surprising is the fact that households in which all members are employed are not significantly less likely to be poor than "non-working" households.[43] Possible explanations for this fact include the low level of wages in Russia, and the limited number of observations. I also investigate the relationship between poverty and health.[44] To the extent that a

[42] Since in the RLMS, information about non-wage arrears is almost absent, in this paper I consider only wage arrears. Here, a reference category for variables characterizing the phenomenon of wage arrears is constructed in the same way as for variables characterizing unemployment, *i.e.*, the reference category consists of households which did not have members from the labor force in all five rounds. This fact actually allows us to compare the results obtained for the phenomena of unemployment and wage arrears.

[43] This is indicated by the fact that the coefficients of the variables NoWArr and NoUnem are insignificant for all values of the dependent variable.

[44] In the RLMS questionnaire, there are several questions related to the state of health of a person. In particular, there is a question that directly asks a person to evaluate her/his health on a five-grade scale. About 95 to 99 percent of the people for different rounds answered this question. In addition, in the questionnaire there are some questions that directly check the ability of a person to do the simplest physical exercises and to meet physiological requirements, such as "How difficult is it for you to eat/ take a shower or bath/ dress/lie down and get up from a bed unassisted." Only about 10 to 20 percent of respondents gave answers to these questions. Although self-estimation of a health level is strongly correlated with the ability of a person to do simple physical exercises and to meet physiological requirements, many respondents believe that they have serious health problems, whereas they can easily meet their physiological requirements and do simple physical exercises, *i.e.*, these respondents sufficiently downgrade their state of health. In order to obtain a maximally adequate estimation of the health of a person, I construct a variable which characterizes the health of a person in each of the rounds, in the following way: I consider a person to have health problems in a certain round if she/he evaluates her/his health as very bad or if she/he answers "Cannot do it" or "Very difficult, but possible" to one of the following questions: "How difficult is it for you to walk across the room?", "Can you eat without external assistance?" and "Can you dress without external assistance?".

serious disease or injury is the reason of disability, it leads to a decrease in labor productivity and therefore to lower income. In addition, health problems of one of the members of a household can implicitly reduce the welfare of the other household members[45] to the extent that part of their income is spent on medication.

My results show that when health problems are observed (either once or persistently), chances that this household is "temporarily poor" or "persistently poor" increase. Nevertheless, in both these cases, a household has more chances of being temporarily poor than persistently poor. The result of a higher incidence of being temporarily and persistently poor for people with health problems seems to be the reverse of that obtained in the paper of Braithwaite and Ivanova (1989), who investigated the relationship between the presence of a disabled person in a household and persistent poverty and did not detect a positive relationship. It appears to be that differences in the results obtained are due to methodological differences, namely, who should be considered to have significant health problems. In their paper, Braithwaite and Ivanova considered as disabled only those persons who reported receipt of a disability pension,[46] excluding those who might be qualified for a disability pension but did not receive it. In my paper, I defined a person to have health problems if she/he is unable to do elementary physical exercises or to meet physiological requirements on her/his own.

6.4. Head-of-household characteristics

To distinguish who is the head of the household, I simply used the corresponding definition from the RLMS questionnaire. It is interesting to note that for 66.5 percent of households, the RLMS definition of head gives the same person as the head for all five rounds, while for 27.7 percent of the households two heads among different rounds could be observed.[47] However, even if the head changed during the five rounds, for about 80 percent of cases, the new head was the spouse of the "previous" head. This suggests that for a rather considerable share of Russian households, it is not always obvious who is considered head of the household.

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[45] In the case of RLMS data, people with serious health problems mostly live in a household, not alone.

[46] Disability pension is that paid to those who are unable to work or have serious health deterioration and is obtained because of work-related or non-work-related injuries or diseases.

[47] For the remaining 5.6 percent of households whose answers showed that more than two persons were named heads in different rounds, I regard the person who was called head most frequently as the head, and if this did not yield a unique person, I regarded as head the person who was called head first.

Nevertheless, Table 11 shows that in most households traditionally the head is a man. Indeed, around 70 percent of all households are headed by a man. And if I restrict this sample to only married heads, the share of households headed by a man increases to 80 percent.

Table 11. Head and spouse characteristics.

	Head characteristics	Spouse characteristics	Only married head characteristics
Share of male heads, %	68.5	19.5	80.5
Mean age of a head	48.8	33.5	41.8
Share of working people among the group*, %	76.0	36.3	90.8
working at government entities*, %	59.0	77.9	57.9
working at a foreign firm*, %	2.5	1.5	2.4
working at a Russian firm*, %	20.0	14.0	19.7
having one's own business*, %	18.5	6.6	20.0
Share of people from the group with higher education, %	17.6	8.2	21.3
Suffered wage arrears once during five rounds, %	10.5	21.2	8.8
Suffered wage arrears more than one time during five rounds, %	11.4	23.8	9.9
Was unemployed once during the five rounds, %	7.4	18.3	7.1
Was unemployed more than one time during the five rounds, %	8.3	19.7	7.7

Source: author's calculation based on the RLMS data (rounds 5–9).

* — calculated on the pooled data of five rounds.

The fact that the head is usually a man significantly affects the basic characteristics of the head. In fact, 76 percent of heads are working people whose spouses are often not working (only 36 percent of all

spouses work). Although most heads are state employees, the share of civil servants among heads is lower than the share of civil servants among the spouses of heads. The share of self-employed heads, on the contrary, is somewhat higher. In addition, the incidence of wage arrears and unemployment for heads is lower than for spouses, and is lower than the mean incidence of wage arrears and unemployment among all individuals observed in the labor force.

To test how individual characteristics influence the household's persistent poverty stage, I used only the head-of-household characteristics. I deliberately excluded the spouse's characteristics from the list of individual characteristics that can affect a household's poverty stage, since not all heads have a spouse.[48] Also, I find that the head is the person whose characteristics seems to have the greatest effect on household well-being. In fact, more than 81 percent of all heads are primary income earners,[49] while the share of primary earners among their spouses is less than 5 percent.

The results show (see Table 18) that households headed by adult women have more chances of falling into poverty than households headed by adult men. However, households headed by elderly persons of either sex have fewer chances of falling into poverty, which is in accordance with the results obtained for the demographic characteristics of a household.

Although many researchers of transition processes in Russia (*e.g.*, Klugman, 1998) attest that higher education received in the Soviet Union did not contribute much to gaining the experience necessary for adapting to market economy conditions, my findings suggest that people with higher education, and households headed by such people, have less chances of being either temporarily poor or persistently poor (see Table 18).[50] However, for households whose heads have secondary or higher education and that fall into poverty, persistent poverty is more probable than temporary poverty. In particular, a household whose head has secondary education has 30 percent higher probability of being per-

[48] Indeed, only 59.4% of all heads are married.

[49] This was determined as a person whose level of permanent income in the five rounds was the highest.

[50] Even if we agree with the opinion that the higher education received at universities and institutes in the Soviet Union is not applicable enough to the Russian transition economy, the fact that households headed by more educated people are less susceptible to poverty can indirectly confirm that more educated people are more adaptable to modern Russian conditions. Moreover, a good education can be a signal to employers, which can give well-educated people a higher chance at getting a well-paid job.

sistently poor than temporarily poor, while a household headed by a person with higher education has 53 percent higher probability of being persistently rather than temporarily poor.

I also investigated the relationship between poverty and the primary occupation of a head of a household. To determine primary occupation I used the answer to the corresponding question from the "Adult Questionnaire."[51] As a reference category for this group of variables, I took households with non-working heads who are mainly receivers of different types of pensions.

My results show that the occupation of the household's head does have a significant effect on poverty. Indeed, according to the results obtained, households whose heads work in the private sector have less chance of being either temporarily or persistently poor, which most likely reflects the fact that in the private sector wages are paid without arrears. Moreover, it is likely that households whose heads are the owners of businesses have a higher chance of escaping from poverty. The last statement is a confirmed by the finding that incomes received from self employment exceed incomes received from wage labor in Russia (Bogomolova and Tapilina, 1998).

6.5. Comparison of different poverty profiles

The results obtained in the preceding sections allow us to consider the major differences between poor and non-poor households, as well as between different poverty profiles. It is worth noticing that factors that make a household more likely to be persistently poor (as opposed to temporarily poor) are the same as those that make these households more likely to be poor in the first place (as opposed to non-poor). Moreover, all dummy variables used in the analysis have the same sign on the probability of a household being temporary and persistently poor, and the opposite sign on the probability of being non-poor. For example, the regression results suggest that households that live in Moscow or St. Petersburg, and whose heads have their own business, are less likely to be in poverty, while households with children that live in rural areas are more likely to be in poverty.

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[51] It should be noted that in 95 percent of the cases, a job is either the only source of income or the main source of income (*i.e.*, a person also has an additional source of income). The remaining 5 percent correspond to cases where personal income from additional sources was higher than that for the source declared by a person as the main source. Nevertheless, because of the instability of additional sources of income for most people, in this paper I did not investigate the influence of additional sources of income on poverty.

At the same time, it is difficult to say in many cases whether a household with certain characteristics is more likely to be persistently or temporarily poor, for example, when comparing households headed by elderly persons with households headed by adults. This is mainly due to problems associated with the construction of time-varying variables. More generally, I was unable to find a variable which, for all household types, increases the probability of being temporarily poor and decreases the probability of being persistently poor.[52]

Nevertheless, I can draw some conclusions about the magnitude of the marginal effect of a variable on the probability of belonging to some poverty profile. For example, my results suggest that households with children, especially single parents with children, are more likely to be persistently poor than other households. For households consisting of a single adult with children or a couple with children, the probability of being persistently poor is 2.9 and 1.6 times higher, respectively, than the probability of being temporarily poor. Besides, large households are most likely to be persistently poor (as opposed to temporarily poor). However, if households whose heads have their own business fall into poverty (for example, during the time of economic crisis), then it is very likely that they fall into temporary poverty. For these households the chances of being temporarily poor are 1.7 times higher than their chances of being persistently poor.

Chronic wage arrears and the inability of household members to find a job for a long period of time both are likely to result in persistent poverty. Households that live in cities (and especially in metropolitan areas) and households whose heads have higher education are less likely to become temporarily poor, and more likely to become persistently poor. A possible explanation for these results is the polarization of incomes for these categories, which tends to be either rather big or rather small.

A few words should be said about the category "households with expenditures close to the poverty line." This category is artificially distinguished and contains those households whose permanent level of expenditures does not reflect the poverty status that a household had in most rounds. Although the expenditures of these households is more volatile in comparison to the those in the "temporarily poor" and "persistently poor" categories, the results of my regressions show that the signs of all right-hand variables coincide for the categories "temporarily poor," "households with variable expenditures around the poverty line" and "persistently poor." That is, the presence of certain characteristics

[52] The results obtained by using multinomial logit analysis (not presented here) also did not lead to the identification of such a variable.

in a household simultaneously either increases or decreases the probability that a household belongs to one of the three poverty categories.

7. REASONS FOR POVERTY ENTRY AND EXIT

In the previous section I investigate how different factors influence the chances of a household being non-poor, temporarily poor, persistently poor, or in the stage with volatile expenditures around the poverty line. Although this approach is useful for analyzing the marginal effects of demographic and regional factors on the chances of being in different poverty profiles, an apparent restriction of this approach is that it models dynamic events by means of a static framework. That is, the observed dynamics of wage arrears, unemployment and health characteristics were incorporated into several dummy variables, after which I analyzed the influence of these dummy variables on the probability of being in one out of four preliminarily determined poverty statuses. However, poverty itself is not a static concept and results from a reduction in household expenditures, which in turn is a consequence of changes in major household characteristics. In this respect, an investigation of the main reasons for entering into or exiting from poverty could be a good compliment to the study of the main reasons for being temporarily or persistently poor.

To determine the main reasons for falling into poverty I use two approaches: a logit approach, and an ordered logit approach. Under the logit analysis, the sample consists of all households that were non-poor in rounds 5 to 8. The dependent variable in this case takes value 1 when a household is poor in the next year, and value 0 when a household remains non-poor in the next year. As independent variables I used dummy variables characterizing the change in time-varying household characteristics that occurred in the period between two successive rounds (the description of these variables is given in the Appendix).

The use of logit analysis allows me to answer the question of how a change in household characteristics increases or decreases the chance that a household falls into poverty. However, it does not answer the question of how long a household will stay in poverty after this change has happened. In order to answer the latter question, an ordered logit approach can be used.

When using ordered logit analysis to model entry into poverty, the sample consists of all households that were non-poor in rounds 5, 6 and 7. The dependent variable takes value 0 when a household is non-poor in the next round, value 1 when a household is poor in the next round but

non-poor in the round after that, and value 2 when a household remains poor for the following two rounds.[53] Thus, I actually distinguish three cases, the first of which corresponds to the situation where a household is non-poor, the second to a situation where a household falls into poverty for exactly one year, and the third to a situation where a household falls into poverty for two or more years.

Following a similar procedure, I can investigate the reasons for escaping from poverty. As before, I use both logit analysis and ordered logit analysis. A logit analysis allows me to answer the question how changes in some household characteristic increase or decrease the chance of escaping poverty,[54] while the use of an ordered logit analysis enables me to distinguish the cases when a household escapes from poverty for only one round, and when a household escapes from poverty for more than one round.[55]

The statistics of the variables are presented in Tables 19 and 20 in the Appendix. When constructing dynamic variables, I use an approach similar to that used by Bogomolova and Tapilina (1998) to determine the influence of changes in major socioeconomic parameters on income mobility. However, a substantive distinction between my approach and that used by Bogomolova and Tapilina is that I modeled the main variables not at the individual level, but at the household level.

7.1. Reasons for poverty entry

The analysis of the main reasons for falling into poverty is presented in Table 12.[56] As this table shows, an increase (decrease) in the number of

[53] An alternative to the approach used in this paper is the approach in which the sample consists of all households that were non-poor in round 5, with the dependent variable taking three values depending on how many rounds (one, two or three) a household was in poverty in the following three rounds. This approach, however, is not applicable in this case, as too few households are poor for exactly two, three or four rounds.

[54] In the case of logit analysis, the sample represents all households that were poor in rounds 5, 6, 7, and 8. The dependent variable takes value 0 when a household remains poor in the next year, and value 1 when a household escapes from poverty in the next year.

[55] In this case the sample consists of all households that were poor in rounds 6, 7, and 8. The dependent variable takes value 0 when a household remains poor in the next round, value 1 when a household exits from poverty in the next round and was non-poor in the preceding round, and value 2 when a household escapes from poverty in the next round and was poor in at least one earlier round.

[56] As in Section 3, I present the main results obtained with the help of logit analysis and ordered logit analysis in marginal effects.

Table 12. Major initial events.

Variable	Logit analysis	Ordered logit analysis			
		Non fall into poverty	For one year	For more than one year	P>|z|
Change of a number of unemployed persons at a household: reference — household there change didn't take place					
UnemUp	−0.015. (0.019)	0.026 (0.016)	−0.013 (0.013)	−0.013 (0.009)	0.372
UnemDown	0.046*** (0.025)	−0.041 (0.017)	0.023 (0.010)	0.018 (0.007)	0.067
Change of a number of persons with wage arrears at a household: reference — household there change didn't take place					
WarrUp	−0.016* (0.004)	0.034 (0.018)	−0.023 (0.007)	−0.011 (0.005)	0.050
WarrDown	0.032* (0.015)	−0.055 (0.017)	0.021 (0.011)	0.034 (0.014)	0.091
Change of a number of persons with bad health at a household: reference — household there change didn't take place					
HealUp	−0.010 (0.031)	0.035 (0.046)	−0.021 (0.025)	−0.014 (0.013)	0.157
HealDown	0.012 (0.016)	−0.015 (0.010)	0.009 (0.012)	0.006 (0.012)	0.174
Moving of a head from public to private sector: reference — household there change didn't take place					
StatUp	−0.087** (0.031)	0.052 (0.040)	−0.033 (0.016)	−0.019 (0.014)	0.044
StatDown	0.007 (0.010)	0.042 (0.039)	−0.024 (0.018)	−0.018 (0.023)	0.304
Moving of a head from employment to own business: reference — household there change didn't take place					
OwnUp	−0.047** (0.030)	0.050 (0.029)	−0.037 (0.019)	−0.013 (0.010)	0.001
OwnDown	0.004 (0.013)	−0.012 (0.035)	0.007 (0.018)	0.005 (0.011)	0.491
N = 6889			N = 5177		
LR $chi^2(10)$ = 54.35			LR $chi^2(20)$ = 30.38		
Log Likelihood = −2547.6742			Log Likelihood = −2615.1726		
Pseudo R^2 = 0.0727			Pseudo R^2 = 0.0844		

* — significant at 10% level;

** — significant at 5% level;

*** — significant at 1% level.

members with wage arrears increases (decreases) the chance of a household falling into poverty. Moreover, a household in which the number of members with wage arrears increased is 1.5 times more likely to be poor during only one round than during two or more rounds. The obtained results seem to indirectly confirm the observation that wage arrears are becoming more and more a temporary phenomenon in Russia.

An increase in the number of unemployed members of a household also increases its chances of being poor in the next year. However, in this case a household is more likely to be in poverty for more than one round. In addition, a reduction of the number of people with health problems can decrease the probability of a household falling into poverty.

Changes in head-of-household characteristics also affect the probability of falling into poverty. For example, if the head of a household changes jobs from government service to employment in a private company, this reduces the chances of his or her household becoming poor in the next round. The same is true if the household head switches from wage labor to managing his or her own business. Moreover, in both cases (switching from public to private employment, or from wage labor to self-employment), the chance that a household falls into poverty for only one year is higher than the chance that the household falls into poverty for two or more years.

7.2. Reasons for poverty exit

As we can see from Table 13, the reasons for exiting poverty are essentially the reverse of the reasons for entering poverty. That is, the chance of exiting from poverty is increased by a decrease in the number of unemployed members, a decrease in the number of members with wage arrears, and by the head of a household moving from a sector with a potentially lower level of wages (public sector) to a sector with a potentially higher level of wages (private sector or self-employment).

More precisely, a decrease in the number of household members with wage arrears or in the number of unemployed members in a household leads to a higher probability of escaping from poverty in comparison with households where the number of unemployed persons or persons suffering from wage arrears did not change. A change in the employment status of the head of a household also has a substantive influence on the probability of exiting poverty for the household headed by this person. Thus, switching from the public to the private sector increases (and switching from the private to the public sector decreases) the chance of a household escaping poverty. The same is also true for switching from employment to managing one's own business, *i.e.*, if a household head

Table 13. Major exit events.

Variable	Logit analysis	Ordered logit analysis			
		Household remains poor	Household escape from temporary poverty	Household escape from permanent poverty	P>|z|
Change of a number of unemployed persons at a household: reference — household there change didn't take place					
UnemUp	−0.071* (0.032)	−0.047 (0.024)	0.026 (0.019)	0.021 (0.010)	0.158
UnemDown	−0.033 (0.046)	−0.093 (0.020)	0.024 (0.013)	0.069 (0.025)	0.051
Change of a number of persons with wage arrears at a household: reference — household there change didn't take place					
WarrUp	−0.135* (0.046)	0.041 (0.031)	−0.021 (0.020)	−0.020 (0.018)	0.115
WarrDown	0.062*** (0.035)	−0.074 (0.031)	0.029 (0.015)	0.045 (0.017)	0.024
Change of a number of persons with bad health at a household: reference — household there change didn't take place					
HealthUp	0.062 (0.041)	0.051 (0.042)	−0.030 (0.024)	−0.021 (0.022)	0.261
HealthDown	0.050 (0.049)	−0.072 (0.029)	0.034 (0.016)	0.038 (0.021)	0.276
Moving of a head from public to private sector: reference — household there change didn't take place					
StatUp	0.077* (0.050)	−0.304 (0.069)	0.122 (0.027)	0.182 (0.035)	0.039
StatDown	−0.066**** (0.042)	0.050 (0.051)	−0.028 (0.029)	−0.023 (0.022)	0.021
Moving of a head from employment to own business: reference — household there change didn't take place					
OwnUp	0.051* (0.30)	−0.014 (0.008)	0.007 (0.003)	0.007 (0.005)	0.042
OwnDown	−0.028** (0.015)	0.035 (0.022)	−0.019 (0.012)	−0.016 (0.015)	0.027
N=1691		N=1262			
LR chi2(10) = 45.72		LR chi2(20) = 37.54			
Log Likelihood = −1114.6738		Log Likelihood = −1317.482			
Pseudo R2 = 0.0537		Pseudo R2 = 0.0836			

*— significant at 10% level;

** — significant at 5% level;

*** — significant at 1% level.

start managing his or her own business, that household is more likely to escape poverty, while a switch from self-employment to wage labor reduces that household's chances of escaping poverty.

8. CONCLUSION AND POLICY IMPLICATIONS

In this paper, I study the main characteristics of persistently (long-term) poor households, as well as the main determinants of entry into and exit from poverty. As an econometric apparatus, in this research I used ordered logit models, which allow me to work effectively with discrete data. Persistent poverty was investigated on the basis of information about household expenditures. I used the concept of relative poverty, *i.e.*, I considered as poor those households whose per-capita equivalent level of expenditures was lower than half the median of the corresponding distribution of per-capita equivalent expenditures (OECD methodology). In order to be able to compare different Russian regions, the expenditure levels in these regions were deflated to corresponding regional prices. The Russian Longitudinal Monitoring Survey (RLMS, rounds 5–9) constituted the main source of information for my analysis.

One of the main conclusions of the paper is that the factors that cause a household to be poor are the same as those that determine whether a household is temporarily or persistently poor. However, I was unable to find particular household characteristics which made temporary poverty to be more likely but persistent poverty to be less likely, or vice versa. Nevertheless, the ordered logit analysis allowed me to answer the question of which poverty profile is the most probable for a household with certain characteristics.

Another main conclusion is that single parents with children, followed by other households with children, have the highest chances of being poor. Moreover, once such households fall into poverty, they are likely to stay there for quite a long period of time. In terms of policy conclusions, this suggests that if the goal is to maximize poverty reduction given a limited set of resources, it would be most efficient to focus on households with children. One could argue that it is less efficient to focus on households consisting of one or two elderly people, which I found to have lower chances of being either persistently or temporarily poor. The latter result should be interpreted with caution, however, since it is most likely explained by my particular use of equivalence scales, which attribute a lower weight to the expenditures of elderly persons.

Persistent poverty is also strongly correlated with the type of settlement and the region of residence. In particular, my results show that house-

holds that live in urban areas, especially in metropolitan areas, are more likely to be poor than households that live in rural areas. However, if the latter households fall into poverty, their chances of being persistently poor are higher than their chances of being temporarily poor. The probability of falling into persistent poverty is higher for households from the Central, North Caucasian, Povolzhsky, and West Siberian regions and lower for households living in the Eastern-Siberian and Ural regions.

The characteristics of the head of the household have also been shown to have a substantial effect on the probability that a household follows a particular poverty profile. For example, households headed by elderly persons were found to have fewer chances of being either persistently or temporarily poor, in comparison with households headed by working-age adults. Moreover, if the head of the household has received higher education, this seems to reduce the chance that the entire household will be poor. Similarly, households whose heads have their own business were found to have a substantially lower chance of falling into any type of poverty than households headed by different types of pension receivers, or households whose heads work in either the public or the private sector.

Apart from the demographic and regional characteristics, and the characteristics of the head of a household, it was found that persistent poverty is highly correlated with such household characteristics as the presence of unemployed members, members with wage arrears, or members with serious health problems. These socioeconomic phenomena have a particularly strong influence on household poverty if they are persistent. The latter result suggests that one of the most effective ways to reduce poverty (and, in particular, to reduce the number of persistently poor households) is to decrease wage arrears.

Finally, I investigate the main reasons for poverty exit and entry, using logit analysis and ordered logit analysis. The results suggest that a household is more likely to escape from poverty if there is a decrease in the number of household members who are unemployed or suffer from wage arrears. In addition, exiting from poverty is more likely if the head of the household changes occupation from the public to the private sector, or changes from wage labor to managing his or her own business.

APPENDICES

A1. Variables used in ordered logit analysis

Sing_ad — equals 1 if household consists of single adult, 0 — otherwise;

Coup_ad — equals 1 if household consists of couple of adults, 0 — otherwise;

Sing_ch — equals 1 if household consists of single adult with children, 0 — otherwise;

Other_ch — equals 1 for other households with children, 0 — otherwise;

Sing_eld — equals 1 if household consists of single elderly person, 0 — otherwise;

Coup_eld — equals 1 if household consists of couple of elderly people, 0 — otherwise;

Two — equals 1 if household has two people, 0 — otherwise;

Three — equals 1 if household consists of three people, 0 — otherwise;

Four — equals 1 if household consists of four people, 0 — otherwise;

Five — equals 1 if household consists of five people, 0 — otherwise;

Five_More — equals 1 if household consists of more than five people, 0 — otherwise;

NorthWest — equals 1 if household is located in North-Western region, 0 — otherwise;

StPeterb — equals 1 if household is located in S-Peterburg, 0 — otherwise;

Central — equals 1 if household is located in Central region, 0 — otherwise;

Moscow— equals 1 if household is located in Moscow, 0 — otherwise;

VolgoVyats — equals 1 if household is located in Volgo-Vyatsky region, 0 — otherwise;

CentChern — equals 1 if household is located in Centralno-Chernosemny region, 0 — otherwise;

Povolzh — equals 1 if household is located in Povolzhsky region, 0 — otherwise;

NorhCauc — equals 1 if household is located in North-Caucasian region, 0 — otherwise;

Ural — equals 1 if household is located in Ural region, 0 — otherwise;

WestSib — equals 1 if household is located in West-Siberian region, 0 — otherwise;

EastSib — equals 1 if household is located in East-Siberian region, 0 — otherwise;

FarEast — equals 1 if household is located in Far East region, 0 — otherwise;

City — equals 1 if household is located in city, 0 — otherwise;

NoUnem — equals 1 if there were no unemployed in household, 0 — otherwise;

OneUnem — equals 1 if in household there were unemployed during only one round, 0 — otherwise;

MoreUnem — equals 1 if in household there were unemployed during more than one round, 0 — otherwise;

NoWArr — equals 1 if in household there was no one suffering from wage arrears, 0 — otherwise;

OneWArr — equals 1 if in household there were people suffering from wage arrears during only one round, 0 — otherwise;

MoreWArr — equals 1 if in household there were people suffering from wage arrears during more than one round, 0 — otherwise;

OneHealth — equals 1 if in household there were people with bad health during one round, 0 — otherwise;

MoreHealth — equals 1 if in household there were people with bad health during more than one round, 0 — otherwise;

HeadWom — equals 1 if household's head is an adult women, 0 — otherwise;

HeadEldW — equals 1 if household's head is an elderly woman, 0 — otherwise;

HeadEldM — equals 1 if household's head is an elderly man, 0 — otherwise;

EdSchool — equals 1 if household's head has only secondary education, 0 — otherwise;

EdSecond — equals 1 if household's head has professional education, 0 — otherwise;

EdHigh — equals 1 if household's head has higher education, 0 — otherwise;

Public — equals 1 if household's head works in public sector, 0 — otherwise;

Private — equals 1 if household's head works in private sector, 0 — otherwise;

Ownment — equals 1 if household's head owns her/his own business, 0 — otherwise;

A2. Variables for investigation poverty entry/exit

UnemUp — equals 1 if number of unemployed in household increases, 0 — otherwise;

UnemDown — equals 1 if number of unemployed in household decreases, 0 — otherwise

WArrlUp — equals 1 if number of people suffering from wage arrears increases, 0 — otherwise;

WArrDown — equals 1 if number of people suffering from wage arrears decreases, 0 — otherwise;

HealUp — equals 1 if number of people with bad health increases, 0 — otherwise;

HealDown — equals 1 if number of people with bad health decreases, 0 — otherwise;

StateUp — equals 1 if head of household changes employment from public sector to private sector, 0 — otherwise;

StateDown — equals 1 if head of household changes employment from private sector to public sector, 0 — otherwise;

OwnUp — equals 1 if head of household changes from receiving wage income to managing own business, 0 — otherwise;

OwnDown — equals 1 if head of household changes from managing own business to receiving wage income, 0 — otherwise;

A3. Tables

Table 14. Poverty and inequality indicators in CEE, former CIS, and Baltic countries before transition and in 1993–1995.

Country	Inequality (GINI coefficient)		
	Income per capita		Expenditures per capita
	1987–1988	1993–1995	1993–1995
Balkans and Poland	0.24	0.30	
Bulgaria	0.23	0.34	
Poland	0.26	0.28	0.31
Romania	0.23	0.29	0.33
Central Europe	0.21	0.24	
Czech Republic	0.19	0.27	
Hungary	0.21	0.23	0.27
Slovakia	0.20	0.19	
Slovenia	0.22	0.25	
Baltics	0.23	0.34	
Estonia	0.23	0.35	0.31
Latvia	0.23	0.31	
Luthuania	0.23	0.37	
Slavic republics	0.24	0.40	
Belarus	0.23	0.28	0.30
Moldova	0.24	0.36	
Russia	0.24	0.48	0.50
Ukraine	0.23	0.47	0.44
Total for transition	0.24	0.33	

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Country	Poverty			
	Poverty headcount, %		Total number of the poor (millions)	
	1987–1988	1993–1995	1987–1988	1993–1995
Balkans and Poland	5	32	3.6	22.4
Bulgaria	2	15	0.1	1.3
Poland	6	20	2.1	7.6
Romania	6	59	1.3	13.5
Central Europe	<1	2	0.1	0.4
Czech Republic	0	<1	0	0.1
Hungary	1	4	0.1	0.4
Slovakia	0	<1	0	0.0
Slovenia	0	<1	0	0.0
Baltics	1	29	0.1	2.3
Estonia	1	37	0.02	0.6
Latvia	1	22	0.03	0.6
Luthuania	1	30	0.04	1.1
Slavic republics	2	52	3.5	112.1
Belarus	1	22	0.1	2.3
Moldova	4	66	0.2	2.9
Russia	2	50	2.2	74.2
Ukraine	2	63	1.0	32.7
Total for transition	3*	43*	7.2*	137.2*

Source: Milanovic (1998), Russia — data of the RLMS, round 3.
* — excluding Central Asia countries.

Table 15. Major components of household expenditures.

	All		
	1994–1996	1998	2000
Food, %	43.0	39.2	45.6
Private plot production, %	11.0	14.9	14.1
Alcohol, tobacco, %	3.3	3.5	3.1
Fuel, %	3.2	2.4	3.1
Clothing, %	7.0	9.1	8.1
Durable goods, %	2.3	3.2	1.5
Luxuries, %	4.7	3.9	1.3
Services, %	10.5	10.0	10.6
Saving*, %	3.5	2.1	3.5
Other expenditures**, %	11.5	11.7	3.7

	Poor		
	1994–1996	1998	2000
Food, %	56.2	51.9	46.1
Private plot production, %	17.4	23.3	17.2
Alcohol, tobacco, %	3.6	4.3	3.3
Fuel, %	2.4	1.7	2.4
Clothing, %	3.2	1.9	7.6
Durable goods, %	0.2	0.8	0.0
Luxuries, %	0.2	0.0	0.1
Services, %	5.2	5.3	5.7
Saving*, %	0.9	0.9	1.2
Other expenditures**, %	10.8	9.9	8.6

Continued from p. 63

	Non-poor		
	1994–1996	1998	2000
Food, %	36.5	33.1	37.7
Private plot production, %	7.4	10.7	8.6
Alcohol, tobacco, %	3.2	3.0	2.8
Fuel, %	2.7	2.4	3.9
Clothing, %	7.8	11.1	10.3
Durable goods, %	4.6	3.7	2.8
Luxuries, %	7.8	8.8	4.7
Services, %	11.0	11.6	9.5
Saving*, %	5.2	1.5	7.5
Other expenditures**, %	13.8	14.1	8.9

* — Including borrowing and holding of stock.

** — Including debt and alimony payments.

Table 16. Transition in and out of poverty for the pooled data.

Probability of staying out of poverty after having been non-poor, in percent	87.0
Probability of staying in poverty after having been poor, in percent	44.4
Probability of staying at least two more years in poverty after having been poor for two years, in percent	36.4
Probability of staying at least one year in poverty after having been poor for two years, in percent	75.9
Probability of being poor for at least two years preceding the period of staying into poverty for two years, in percent	36.8
Probability of being poor for at least one year preceding the period of staying into poverty for two years, in percent	71.9

Source: author's calculation based on RLMS data.

Table 17. Summary statistics for ordered-logit analysis (all statistics are calculated as a percentage of the whole number of households in the corresponding poverty profile).

Variable	Total	Non-poor	Temporarily poor	Volatile expend	Persistently poor
Coup_ad	0.08	0.08	0.07	0.08	0.09
Sing_ad	0.04	0.02	0.03	0.08	0.09
Other_ch	0.40	0.36	0.43	0.46	0.47
Sing_eld	0.15	0.16	0.18	0.16	0.07
Coup_eld	0.12	0.13	0.14	0.09	0.08
Other	0.17	0.19	0.14	0.11	0.16
Two	0.29	0.32	0.26	0.25	0.25
Three	0.23	0.24	0.23	0.24	0.15
Four	0.17	0.15	0.19	0.17	0.20
Five	0.07	0.06	0.06	0.08	0.13
Five_More	0.05	0.03	0.07	0.09	0.09
NorthWest	0.04	0.04	0.03	0.02	0.04
StPeterb	0.01	0.02	0.00	0.00	0.01
Central	0.20	0.18	0.20	0.22	0.25
Moscow	0.03	0.04	0.01	0.00	0.03
VolgoVyats	0.06	0.06	0.07	0.07	0.06
CentChern	0.04	0.04	0.04	0.04	0.05
Povolzh	0.16	0.12	0.16	0.28	0.24
NorthCauc	0.13	0.12	0.15	0.14	0.11
Ural	0.16	0.17	0.18	0.14	0.11
WestSib	0.10	0.10	0.10	0.08	0.08
EaetSib	0.03	0.05	0.03	0.01	0.00
FarEast	0.04	0.06	0.03	0.01	0.01

Continued from p. 65

Variable	Total	Non-poor	Temporarily poor	Volatile expend	Persistently poor
City	0.61	0.65	0.57	0.54	0.59
NoWArr	0.21	0.24	0.19	0.19	0.16
OneWArr	0.25	0.25	0.25	0.26	0.24
MoreWArr	0.32	0.31	0.31	0.35	0.36
NoUnem	0.32	0.31	0.33	0.32	0.29
OneUnem	0.19	0.19	0.20	0.20	0.18
MoreUnem	0.22	0.18	0.23	0.31	0.36
OneHealth	0.18	0.18	0.18	0.18	0.21
MoreHealth	0.44	0.41	0.49	0.46	0.45
HeadWom	0.20	0.19	0.19	0.21	0.23
HeadEldM	0.31	0.32	0.32	0.28	0.29
HeadEldW	0.12	0.13	0.11	0.11	0.08
EdSchool	0.41	0.42	0.39	0.40	0.39
EdHigh	0.17	0.23	0.12	0.05	0.08
Public	0.44	0.45	0.44	0.44	0.40
Private	0.18	0.20	0.17	0.18	0.12
Ownment	0.16	0.18	0.15	0.11	0.13

As all variables used in the analysis are dummy variables, standard deviations, which have a one-one relationship with means, are not presented.

Table 18. Results of ordered logit regression.

Variable	Non-poor	Temporarily poor	Volatile expend	Persistently poor	$P > [z]$
Type of a household: reference — single adult					
Coup_ad	0.048 (0.064)	−0.022 (0.047)	−0.011 (0.020)	−0.015 (0.027)	0.423
Sing_ad	−0.304 (0.043)	0.054 (0.019)	0.093 (0.021)	0.157 (0.049)	0.086
Other_ch	−0.138 (0.025)	0.041 (0.019)	0.031 (0.009)	0.066 (0.018)	0.001
Sing_eld	0.063 (0.041)	−0.012 (0.014)	−0.021 (0.019)	−0.030 (0.018)	0.073
Coup_eld	0.119 (0.062)	−0.058 (0.029)	−0.021 (0.011)	−0.040 (0.017)	0.091
Other	0.028 (0.065)	−0.008 (0.025)	−0.010 (0.034)	−0.011 (0.027)	0.395
Size of a household: reference — households that consist of one person					
Two	0.092 (0.077)	−0.046 (0.041)	−0.019 (0.015)	−0.027 (0.022)	0.197
Three	0.051 (0.070)	−0.024 (0.042)	−0.013 (0.018)	−0.014 (0.021)	0.572
Four	−0.183 (0.042)	0.068 (0.015)	0.027 (0.010)	0.088 (0.019)	0.000
Five	−0.163 (0.037)	0.045 (0.006)	0.038 (0.009)	0.080 (0.017)	0.000
Five_More	−0.206 (0.067)	0.068 (0.017)	0.054 (0.018)	0.084 (0.020)	0.000

Continued from p. 67

Variable	Non-poor	Temporarily poor	Volatile expend	Persistently poor	*P* > [z]
Location of a household: reference — household located in Northern region					
NorthWest	−0.278 (0.054)	0.029 (0.031)	0.074 (0.019)	0.175 (0.062)	0.495
StPeterb	0.372 (0.057)	−0.204 (0.037)	−0.046 (0.014)	−0.122 (0.009)	0.000
Central	−0.288 (0.046)	0.084 (0.013)	0.062 (0.012)	0.142 (0.032)	0.000
Moscow	0.291 (0.085)	−0.156 (0.042)	−0.042 (0.009)	−0.093 (0.018)	0.001
VolgoVyats	−0.258 (0.217)	0.025 (0.043)	0.082 (0.054)	0.151 (0.091)	0.643
CentChern	−0.276 (0.066)	0.064 (0.042)	0.057 (0.039)	0.155 (0.098)	0.209
Povolzh	−0.374 (0.037)	0.063 (0.031)	0.083 (0.014)	0.228 (0.078)	0.014
NorthCauc	−0.242 (0.041)	0.053 (0.007)	0.074 (0.010)	0.115 (0.037)	0.000
Ural	0.347 (0.058)	−0.057 (0.012)	−0.076 (0.019)	−0.214 (0.068)	0.000
WestSib	−0.198 (0.034)	0.049 (0.009)	0.057 (0.012)	0.092 (0.032)	0.000
EaetSib	0.167 (0.071)	−0.048 (0.014)	−0.027 (0.016)	−0.092 (0.051)	0.005
FarEast	0.034 (0.092)	−0.017 (0.057)	−0.007 (0.033)	−0.010 (0.029)	0.540
Type of location: reference — household situated in village					
Settlel	0.063 (0.035)	−0.034 (0.016)	−0.019 (0.006)	−0.010 (0.007)	0.052

Continued from p. 68

Variable	Non-poor	Temporarily poor	Volatile expend	Persistently poor	*P* > [z]
People with wage arrears in a household: reference — not in labor force					
NoWArr	0.055 (0.051)	−0.017 (0.025)	−0.022 (0.027)	−0.016 (0.034)	0.301
OneWArr	−0.184 (0.064)	0.089 (0.037)	0.037 (0.012)	0.058 (0.014)	0.000
MoreWArr	−0.294 (0.049)	0.091 (0.007)	0.067 (0.012)	0.136 (0.034)	0.000
Unemployed people in a household: reference — not in labor force					
NoUnem	0.064 (0.058)	−0.029 (0.036)	−0.016 (0.010)	−0.019 (0.014)	0.174
OneUnem	0.019 (0.067)	−0.008 (0.029)	−0.004 (0.014)	−0.007 (0.016)	0.769
MoreUnem	−0.096 (0.047)	0.034 (0.028)	0.021 (0.016)	0.041 (0.023)	0.059
People with health problems in a household: reference — people without health problems					
OneHealth	−0.078 (0.025)	0.026 (0.011)	0.020 (0.007)	0.032 (0.013)	0.016
MoreHealth	−0.083 (0.032)	0.039 (0.015)	0.021 (0.006)	0.023 (0.008)	0.009
Type of head of a household: reference — households headed by adult man					
HeadWom	−0.072 (0.034)	0.021 (0.014)	0.028 (0.007)	0.023 (0.012)	0.068
HeadEldM	0.049 (0.047)	−0.024 (0.026)	−0.011 (0.012)	−0.014 (0.023)	0.059
HeadEldW	0.020 (0.042)	−0.007 (0.023)	−0.006 (0.018)	−0.007 (0.028)	0.096

Continued from p. 69

Variable	Non-poor	Temporarily poor	Volatile expend	Persistently poor	*P* > [z]
Education of head: reference — under-educated head					
Hschool	0.170 (0.110)	−0.082 (0.057)	−0.033 (0.015)	−0.055 (0.037)	0.163
EdSchool	0.214 (0.118)	−0.107 (0.063)	−0.033 (0.021)	−0.074 (0.040)	0.093
EdHigh	0.325 (0.067)	−0.183 (0.042)	−0.056 (0.010)	−0.086 (0.012)	0.001
Occupation of head: reference — non-working head					
Public	0.010 (0.036)	−0.004 (0.018)	−0.002 (0.015)	−0.004 (0.021)	0.561
Private	0.106 (0.047)	−0.030 (0.008)	−0.023 (0.009)	−0.053 (0.025)	0.025
Ownment	0.171 (0.125)	−0.052 (0.021)	−0.031 (0.019)	−0.088 (0.063)	0.066
N =2145			Log Likelihood = −2672.1735		
LR $chi^2(41)$ = 661.57			Pseudo R^2 = 0.1342		

Table 19. Major statistics for poverty entry analysis.

Falling into poverty	Logit model		
	Whole sample	Not fall into poverty	Fall into poverty
Number of households in a sample	6889	5994	895
Share of households with unemployed members in the whole sample, %	17.8	18.0	16.7
Share of households in which number of unemployed increased, %	10.3	10.0	12.3

Continued from p. 70

Falling into poverty	Logit model		
	Whole sample	Not fall into poverty	Fall into poverty
Share of households in which number of unemployed decreased, %	47.7	47.6	48.0
Share of households with members suffering from wage arrears in the whole sample, %	26.2	26.5	24.1
Share of households in which number of people suffering from wage arrears increased, %	16.8	16.4	19.7
Share of households in which number of people suffering from wage arrears decreased, %	52.2	53.0	46.7
Share of households with members with bad health in the whole sample, %	32.7	31.7	39.4
Share of households in which number of people with bad health increased, %	24.8	24.6	26.0
Share of households in which number of people with bad health decreased, %	47.9	49.1	41.4
Share of working heads, %	79.6	82.4	60.9
Head working in public sector, %	55.3	54.6	61.5
Head working for private firm, %	24.8	25.3	20.7
Head manages his/her own business, %	19.9	20.1	17.8
Head changed employment from public to private sector, %	29.4	29.9	25.1
Head changed employment from private to public sector, %	27.3	27.8	22.4

Continued from p. 71

Falling into poverty	Logit model		
	Whole sample	Not fall into poverty	Fall into poverty
Head changed employment from wage labor to managing own business, %	7.4	7.7	5.1
Head changed employment from managing own business to wage labor, %	49.5	49.9	45.4

Falling into poverty	Ordered logit model			
	Whole sample	Not fall into poverty	Fall in one year	Fall in more than one year
Number of households in a sample	5177	4501	432	244
Share of households with unemployed members in the whole sample, %	13.7	13.6	13.9	15.6
Share of households in which number of unemployed increased, %	10.9	10.8	12.3	11.5
Share of households in which number of unemployed decreased, %	53.4	53.3	54.1	53.2
Share of households with members suffering from wage arrears in the whole sample, %	23.2	23.0	25.5	24.2
Share of households in which number of people suffering from wage arrears increased, %	18.0	17.4	22.8	21.4

Continued from p. 72

Falling into poverty	Ordered logit model			
	Whole sample	Not fall into poverty	Fall in one year	Fall in more than one year
Share of households in which number of people suffering from wage arrears decreased, %	57.7	58.1	54.4	57.1
Share of households with members with bad health in the whole sample, %	29.3	28.4	35.6	33.6
Share of households in which number of people with bad health increased, %	31.3	31.2	31.7	32.7
Share of households in which number of people with bad health decreased, %	26.4	26.8	23.7	25.6
Share of working heads, %	81.9	84.7	68.1	56.1
Head working in public sector, %	55.6	55.0	60.9	61.3
Head working for private firm, %	22.8	23.2	19.7	18.2
Head manages his/her own business, %	21.6	21.9	19.4	20.4
Head changed employment from public to private sector, %	28.9	29.3	25.7	26.7
Head changed employment from private to public sector, %	27.4	27.4	26.2	28.7
Head changed employment from wage labor to managing own business, %	7.9	8.1	5.8	7.0
Head changed employment from managing own business to wage labor, %	48.3	48.3	48.5	47.5

* — Statistics are presented for the year preceding the year in which falling into poverty took place.

Source: Author's calculation based on RLMS data.

Table 20. Major statistics for escaping from poverty reasons analysis.

	Logit model		
	Whole sample	Not escaped from poverty	Escaped from poverty
Number of households in a sample	1691	932	759
Share of households with unemployed members in the whole sample, %	23.8	21.0	27.3
Share of households in which number of unemployed increased, %	14.8	17.2	11.5
Share of households in which number of unemployed decreased, %	51.4	50.0	52.7
Share of households with members suffering from wage arrears in the whole sample, %	30.9	30.5	31.5
Share of households in which number of people suffering from wage arrears increased, %	17.9	20.5	14.7
Share of households in which number of people suffering from wage arrears decreased, %	57.2	53.9	61.1
Share of households with members with bad health in the whole sample, %	34.8	35.9	33.3
Share of households in which number of people with bad health increased, %	26.6	27.4	25.5
Share of households in which number of people with bad health decreased, %	47.3	47.7	46.8
Share of working heads, %	62.1	60.6	63.9
Head working in public sector, %	63.6	65.8	61.0
Head working for private firm, %	18.2	16.5	20.2

Continued from p. 74

	Logit model		
	Whole sample	Not escaped from poverty	Escaped from poverty
Head manages his/her owns business, %	18.2	17.7	18.8
Head changed employment from public to private sector, %	31.4	27.7	36.1
Head changed employment from private to public sector, %	52.4	58.7	45.9
Head changed employment from wage labor to managing own business, %	7.8	7.1	8.6
Head changed employment from managing own business to wage labor, %	55.0	58.7	50.9

	Ordered logit model			
	Whole sample	Not escaped from poverty	Escaped from temporary poverty	Escaped from persistent poverty
Number of households in a sample	1262	575	432	255
Share of households with unemployed members in the whole sample, %	24.2	25.7	21.3	25.9
Share of households in which number of unemployed increased, %	14.9	14.7	14.7	15.4
Share of households in which number of unemployed decreased, %	46.1	42.5	49.3	49.6
Share of households with members suffering from wage arrears in the whole sample, %	33.0	33.2	29.9	37.6

Continued from p. 75

	Ordered logit model			
	Whole sample	Not escaped from poverty	Escaped from temporary poverty	Escaped from persistent poverty
Share of households in which number of people suffering from wage arrears increased, %	17.0	17.6	16.5	16.6
Share of households in which number of people suffering from wage arrears decreased, %	60.3	55.9	60.7	68.6
Share of households with members with bad health in the whole sample, %	46.6	44.0	49.8	47.1
Share of households in which number of people with bad health increased, %	15.6	15.6	15.7	15.3
Share of households in which number of people with bad health decreased, %	47.3	47.4	47.9	45.9
Share of working heads, %	59.8	62.4	56.5	59.6
Head working in public sector, %	61.7	58.8	67.2	59.9
Head working for private firm, %	21.7	23.7	18.9	21.7
Head manages his/her owns business, %	16.6	17.5	13.9	18.4
Head changed employment from public to private sector, %	32.6	29.8	33.1	38.4
Head changed employment from private to public sector, %	53.6	54.3	53.7	51.8
Head changed employment from wage labor to managing own business, %	7.9	7.8	8.1	8.0
Head changed employment from managing own business to wage labor, %	58.4	59.6	57.6	56.6

* — Statistics are presented for the year preceding the year in which escaping from poverty took place.

Source: author's calculation based on RLMS data.

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